THE

SOUTHERN AGRICULTURIST.

MARCH, 1833.

PART I.

ORIGINAL CORRESPONDENCE.

ART. XVIII.—*Essay on Rototation of Crops; by* J. HAMILTON COUPER; *read before the Union Agricultural Society.*

(Concluded from page 66.)

IN the preceding observations, an attempt has been made to sketch out, and to elucidate by the sound theories of science, those leading principles of a rotation of crops, which have received the sanction of the ablest practical and scientific agriculturalists. Before proceeding to illustrate them by the practices of the best cultivated countries, it may not be useless to present, in a more distinct form, the following recapitulation.

First Principle.—In the selection of crops, to consult the climate, soil, situation, the demand resulting from markets, and the other circumstances which constitute the peculiarities of local position.

Second Principle.—Plants possessing a system of broad leaves, are to be alternated with those having narrow leaves.

Third Principle.—Fibrous rooted are to be alternated with tap and tuberous rooted vegetables.

Fourth Principle.—The recurrence of the same plant, on the same field, or of plants of the same character, is to

be removed as far as possible. And their return should be so much the longer delayed, as they have the longer occupied the soil.

Fifth Principle.—Plants which during their growth require the operations of stirring the earth and weeding, to be alternated with those which do not.

Sixth Principle.—The application of manure to be made to the most valuable and exhausting crops, as far as may be consistent with the preceding principle.

Seventh Principle.—The succession of crops should be so arranged, that the work which they require shall follow in easy, regular and economical order.

Eighth Principle.—Land should be left bare as short a time as possible. And should be kept covered with plants valuable in themselves, or which contribute to the increased value of those which are to follow.

The first example of a course of crops will be drawn from French Flanders, a part of Europe inferior to no other in the value of its crops, the garden-like culture of its fields, and the skill with which its diversified products are combined, which claims to be the "true cradle of regular and systematic rotations of crops:"* in which they have been pursued for a century: and when the fertility and beauty of the country—a happy and comfortable population amounting to nearly an individual to two acres of land, and a disposable surplus of one-third of the products of the soil, attest the perfection of their peculiar system of agriculture, and is the highest elogium which can be paid to the value of a rotation of crops.

In this district the courses of crops vary with the soil to which they are to be applied, not only in the kind but in the number of the plants of which they are composed: presenting a nice adaptation of the character of the vegetable to the peculiarity of the soil; and fulfilling all, or nearly all of the conditions of an enlightened system of rotations. Amidst the diversity which exists, from this cause, a leading principle is still observable in all of the courses whether of long or of short duration. The plants which compose them are thrown into three great divisions, comprising different natural families.† These divisons are made to alternate with great regularity, although the

* Yvart. † *Cordier.* Memoire sur l'Agri: de la Flandre Française.

plants contained in them are frequently deranged in the order of their succession, to meet the fluctuations of markets, and the vicissitudes of the seasons.

The first division contains *Oleaginous* plants, as rape, flax, poppy, cameline and hemp; and plants of the *Solaneæ* family, as potatoes and tobacco.

The second, embraces *Cereal or grain* plants, as wheat, barley, oats and rye.

The third, *Leguminous* plants, as beans, peas, vetches, lentils, clover, sainfoin and lucern.

This mode of succession will be best illustrated by the following example taken from the vicinity of Lille.* It is a rotation on a farm of forty-eight acres.

1st year.—*Plants of the* 1*st Division*—*Rape*, with stable and liquid manure, 4 acres, followed as a 2*d crop*, by 2 acres of carrots, beets or turnips.

2d year.—*Plants of the* 2*d Division*.—4 acres of *wheat* not manured: 2*d crop*, 2 acres of turnips, carrots, or cabbages, with liquid manure.

3d year.—*Plants of the* 3*d Division*.—4 acres of *beans*.

4th year.—*Plants of the* 1*st Division*.—4 acres of *potatoes*, with stable and liquid munure.

5th year.—*Plants of the* 2*d Division*.— { 2 acres of *barley*, with clover cut the first year. / 2 acres of *oats*, do. do.

6th year.—*Plants of the* 3*d Division*. 4 acres of *clover*, three cuttings.

7th year.—*Plants of the* 1*st Division*.— { 3 acres of *flax*, with liquid manure and oil cakes. / 1 acre of *tobacco*, same manure, followed as a 2*d crop*, by 2 acres of turnips, carrots, &c.

8th year.—*Plants of the* 2*d Division*.—2 acres of bearded *wheat* } / 2 acres of *Rye* } followed by carrots, turnips, &c. as in 2*d crop*, with liquid manure.

9th year—*Plants of the* 3*d Division*.—2 acres of *winter Barley, cut green* } / 2 acres *winter forage*† } followed by 2 acres of cabbages, beets, or turnips, as a 2*d crop*, with liquid manure.

10th year.—*Plants of the* 1*st Division*.—*Rape*, 4 acres, for the seed, with stable and liquid manure, followed as a 2*d crop*, by 2 acres of turnips, carrots, &c.

11th year.—*Plants of the* 2*d Division*.—4 acres *wheat*, followed by 2 acres turnips and carrots, as a 2*d crop*.

12th year.—*Plants of the* 3*d Division*.—3 acres *beans*, 1 acre *winter barley, cut green*, followed by a nursery of rape plants as a 2*d crop*, with liquid manure.

* Idem. p. 291. † A a mixed forage crop, principally of legumes.

In this course of crops there are four returns of the three great divisions. Each return fulfils most of the important principles. *The first year*, the land is well manured, and well stirred and weeded. The application of manure is made to the most exhausting and valuable crop of the series. At the end of this year, the soil is left rich, well stirred and clean; qualities which are required by the grain crops which are to follow. The crops of this year are removed in time, to admit of the preparatory operations for those of the next. The *second year* the land is occupied by grain crops, which succeed perfectly well, as it is clean, enriched and well stirred. No manure is added this year, as its recent application fills the soil with weeds, and from an excess of vegetation, occasions the lodging of the grain. The *third year*, it becomes necessary to replace the grain crops, which have left the soil impoverished, hard, and foul with weeds, by some crop which is ameliorating and cleansing. Hence, the cultivation of leguminous crops this year, which by their broad leaves and succulent stems, draw their nourishment from the atmosphere, and by the decay of their leaves, stems and roots convey it to the soil: which by their system of tap-roots pulverize the earth; and by their dense shade, and the culture which they require, destroy the weeds produced by the preceding crop.

These effects are reproduced whatever may be the length of the rotation. "It may be seen," says the author from whom this example is taken, "that in this rotation of twelve changes, each variety of oleaginous, cereal and leguminous plants only returns twice; that the greater part and the most exhausting, as potatoes, flax, are only cultivated once. The great condition, therefore, of an extreme variety of crops is accomplished, and all the others are exactly fulfilled, since ameliorating crops and hoed and manured plants precede and follow the grain crops, which have the double inconvenience of exhausting and infesting the earth with noxious weeds."

The productiveness of this rotation is shewn by its yielding four grain, four oleaginous, four leguminous, and four secondary root crops; being sixteen crops in twelve years.

The frequent introduction of double or secondary crops, forms a striking and valuable feature in this and all the

other rotations of Flanders. One not less valuable is that, fallows, whether naked or covered, form no part of them.

It would be interesting to enter into an examination of the courses of crops adopted in Dutch Flanders, as they present many useful hints, and valuable lessons, but I fear that I have already exhausted the patience of the Society; and as I purpose, should leisure permit, to offer at some future time, the result of a personal examination of the agriculture of that country, I pass from it with the less reluctance to the rotations of England.

These are much less perfect than those of Flanders, as they include, on strong clay lands, a naked fallow; (a practice justly exploded by the best agriculturalists) and from the climate and peculiar circumstances of the country, admit a less variety of plants, and consequently of a less protracted course of crops. These limited rotations are, however, managed with much judgment. I will instance only two.

The first is the celebrated Norfolk rotation; adapted to a sandy loam. The change which it has produced in the agricultural character of the country is so notorious, as to be familiar to all. An examination of the high state of culture, and of the beautiful crops produced by it, on soils of the most unpromising appearance, enable me to bear personal testimony of its excellence.

1st year.—*Turnips*, on 27 inch ridges, with from 8 to 15 tons of manure, and one-fourth of a ton of oil-cake to the acre. Preceded by four ploughings and harrowings, and cultivated by two or three horse and hand hoeings. The crop eat on the ground by sheep.

2d year.—*Barley*, sown in drills of 7 inches, without manure. Ten pounds of white clover and 16 quarts of rye-grass seed sown with it.

3d year.—*Clover and Rye-grass.*

4th year.—*Wheat*, in drills 9 inches apart.

This course is sometimes prolonged to five years, by continuing the clover and grass a second year.

Its excellencies are, that turnips and clover which are ameliorating crops, are alternated with barley and wheat, which are exhausting; plants with different systems of roots succeed each other; the same plants recur only once; the manure is applied to the preparatory and cleansing crop of turnips, which being an ameliorating one, and eat on the ground by sheep, leaves the soil in a high

state of neatness and fertility, to receive the exhausting crop of barley which follows; the interval between the wheat and turnip crops admits of the production of the fine tilth which the latter reqùires; the clover and grass induce the closeness of staple, desirable on a sandy soil for wheat; while the treading of the land by sheep, corrects that openness which is one of the defects of light, gravelly lands. The faults in this course are, that there is a waste of manure in feeding turnips on the ground, and that the shortness of its duration does not admit of the deficiency of manure which results from this cause, and from the number of exhausting crops, being supplied from additional ameliorating crops. These defects have led Mr. Coke to combine it with a second rotation, in which a peas crop succeeds a second year of grass, making a six years course of, 1st, turnips; 2d, barley; 3d, cocks-foot and other grasses pastured; 4th, grass pastured; 5th, peas; 6th, wheat. In this rotation the increase number of ameliorating crops, corrects the defect of the preceding.

The next examples which I shall offer to your consideration are taken from Italy, a country which approaching our own in climate and vegetable productions, becomes the more interesting to us for modified imitation.

On the rich alluvial plains of Po, in the vicinity of Parma, the following course of crops is that generally pursued.*

1st year.—*Indian Corn* and *Hemp*, manured.
2d year.—*Wheat*.
3d year.—Winter *Beans*.
4th year.—*Wheat*, manured.
5th year.—*Clover*, turned in after the first cutting.
6th year —*Wheat*.

This is an instance of highly productive, and very exhausting rotation; but which is sustained by the great natural fertility of the soil, maintained by the abundance of manure which is afforded by an irrigated meadow of more than a fourth of the extent of the arable land, cut three times a year, and consumed by large stocks of cattle.

On the rice lands of Lombardy, the rotation adopted is of five years, being three years in rice, and two in natural meadow. For three years the land is planted in rice.

* Lettres Ecrites d'Italie à M. Pictet.

"No manure is applied during this time: the continuance of the water would neutralized the effect, and its presence is sufficient for the vegetation. But after these three consecutive crops, the exhausted earth requires sun, air and repose. It is left uncultivated, and the humidity produces a spontaneous growth of plants adapted to the nature of the soil; it is manured, then only, on the new sward, and during two years an abundant but coarse crop of hay is gathered from it."*

This rotation is not cited, as offering an example for imitation, but merely to show the necessity which in a country, so fertile as Lombardy, and where there is a command of water, is deemed to exist, of manuring, and of resorting to a dry culture and a change of plants in the cultivation of rice.

In the valley of the Arno, in Tuscany, the following course of four years is a common one.†

1st year.—*Wheat*, followed in autumn by *Haricot Beans*, intermixed with Indian Corn.
2d year.—*Wheat*, followed by *Lupins*.
3d year.—*Wheat*, followed by a forage crop.
4th year.—*Indian Corn*, millet or sorgho.

Being seven crops in four years, of which four are exhausting and three ameliorating. We have in this example an admirable instance of great productiveness, resulting from the introduction of secondary crops, which at the same time happily interrupt the succession of the exhausting plants. It is owing to the latter cause, to great natural fertility, the highest cultivation, and to irrigation, that the soil is not exhausted under this rotation, which has been adopted to meet the exigencies of a very dense population.

I will detain the Society, to present to their consideration, only one more example of rotation, drawn from the vicinity of Sorento, in the kingdom of Naples, in which our great staple is introduced.

1st year.—*Indian Corn*, manured.
2d year.—*Wheat*, followed by *Beans*.
3d year.—*Cotton*.
4th year.—*Wheat*, followed by purple *Clover*.
5th year.—*Melons*, followed by *Legumes*.

* Chateauvieux. † Simonde Tableau de l'Agri: Toscane.

Producing eight crops in five years. "It is impossible," says Chateauvieux, "to make a better arrangement of the various crops. The nature of their vegetation, and the various cultures which they require, alternately rest and prepare the soil, of which the fertility is preserved by this variety, for the production of every thing which the earth can render to human industry."

ART. XIX.—*On Manures, &c.; by* W. A. G.

"Georgia, (Columbia County,) Octoher 25, 1832.

Dear Sir,—A long and severe illness has placed it out of my power with any satisfaction to myself, to comply with your request at a more early period. Permit me, Sir, to assure you, that no one feels a more lively interest in our agricultural prosperity than myself; and any thing that I can contribute that is calculated to aid your undertaking, is at your service. The only reluctance I feel in appearing in the character of an agricultural essayist, arises from the conviction of my want of experience on the subject. I hinted to you in a former communication, that I was a young planter, and consequently any observations that I may make are entitled to but little respect. For I think it is only after long and patient inquiry that we may deem our results of sufficient importance to present to the consideration of the public. Premising this much, the following remarks can be taken for what they are worth.

Since the principal part of the grounds in the immediate neighbourhood of the stables have been manured, I have thought it most advisable to place the cowpen on the field intended to be manured, to diminish the distance of carriage, which is a matter of considerable importance. This year I changed my cattle from their former to their present pen, about the middle of July. Two ox-carts and two wagons, with a proper number of

hands were employed in collecting the first layer of leaves, since then, one wagon with three good hands have been almost constantly engaged in supplying the pen with leaves, swamp-mud, &c. My plan in forming my compost is, to lay down first a layer of leaves and weeds, or corn-stalks, and then a layer of mud. When it has been sufficiently saturated with the dung and urine of the stock, it is well mixed together by ploughing it once or twice, or even three times, if necessary, I then commence forming another layer, and so on. You may form some idea of the industry I have used in collecting my materials, when I inform you, that I have from the middle of July to the present time hauled into my cowpen, between fourteen and fifteen hundred wagon loads of leaves, and that at the same time I have kept my stables well littered. I have not as yet made use of cotton-stalks, prefering corn-stalks on account of their being of a more porous nature, and of course better calculated to absorb the moisture of the farm pen, but if greater industry should carry me beyond a sufficient supply of those materials, I shall undoubtedly resort to them; for I am confident but few things are better calculated to be substituted in their place.

The number of cattle penned, amount generally to forty-five head of cows, and seventy of sheep. My sheep, I have not been in the habit of penning till latterly, being under the impression that it was an injury to them. So far, however, I have discovered no injury to arise from it, and I will continue the practice until I have some positive evidence of its bad consequences; for their dung is of great importance, and if possible, they should be made to contribute their share in the improvement of the land. The oxen are stalled when at work, and well fed on pumkins and pea vines, and when the labour is hard, a portion of corn-meal is added, which is mixed up with cut shucks or rye-straw. I have for the last two or three years stalled a few milch cows, treating them as I did my oxen; but the increase of milk was not as great as I expected, owing, I think, to a deficiency of succulent food. I am in hopes this winter to be able to remedy that evil, as I have three acres and a half of turnips, which at this time look very promising. One-half are ruta baga; they were drilled with a turnip drill on ridges two and a

half feet apart, the ground having been previously put in good order by frequent ploughings, it was also well manured. My stables, as I have observed, I keep well littered; I clean them out every ten or twelve days, removing the dung immediately to the field, if it is ready for its reception. If not, I place it in rail-pens in the yard. When horses are managed in this manner, the quantity of manure they make greatly exceeds the calculation of those who are in the habit of permitting them to stand month after month on their dung, without allowing them a fresh bed of straw or leaves. If the accumulation of manure is not a matter of sufficient importance, the life, health, and comfort of the animals deserve to be considered. For I am confident that many of the diseases which afflict horses are caused by the filthy or negligent manner in which they are kept. But every means in our power should be most diligently used to obtain the greatest quantity of manure. It has been emphatically called the farmers "gold dust," and the distinguished author of "*Arator*," has declared that "the agriculturist who expects to reap good crops from neglecting his manures, is equally a fanatic with the religionist, who expects heaven from neglecting his morals." "The true secret in carrying on this business to advantage, is to make it at once a distinct and separate concern, and one worthy of attention." It should be pursued with an energy equal to its importance: by no means delaying the cleaning out your stables to a rainy day, or permitting your cow-pen, or hog-pen, to suffer for the want of those materials, without an abundant supply of which, their dung is of but little profit.

The steril aspect of the country, both in Georgia and South-Carolina, indicates too truly our wretched system of agriculture, and the necessity of an immediate change if we wish to preserve the little remnant of fertility still left in our lands. It is useless to think of cultivating the grasses until our lands are rendered sufficiently good to produce them to advantage. It is equally useless to attempt to improve our stock by the introduction of fine animals, until we have pastures to support them, and the means of procuring for them, an ample supply of winter provisions. The basis then of all agricultural improvement, is a liberal system of manuring.

"Without fertility of soil, labour cannot be rendered effective or good crops obtained; for of what avail is any rotation of crops, the best contrived implements of husbandry, or the most perfect use of those implements, when applied to a barren soil. Fertility of soil is the capital from which all profits in agriculture must be derived. Manuring only, can recover this capital so much of which is already wasted by bad husbandry."

I know it has been frequently stated by writers on this subject, that slave labour is unfriendly to every thing like good tillage. By what train of reasoning they arrived at this very ingenious conclusion. I do not exactly recollect; but I think one of them points to our deserted old fields growing in broom sedge and briars as an evidence of the fact. I am ready to admit there are but too many proofs of our slovenly system of agriculture, and the one just mentioned stands at the head of the list; but it is no evidence of our inability to do better. Every thing depends upon the intelligence and industry of the individual who directs the labour; if he chooses to employ a part of it in the making manure, I should be glad to know what is to prevent him. Five or six years past, when I first read the essays of Agricola, I was somewhat surprised at the assertion, that one acre could be as easily manured as one could be cleared. I say, I then marvelled at its absurdity; but greater experience in those matters has convinced me of the truth of the observation. If then, it is an admitted fact, and I believe it almost susceptible of demonstration, the question will at once present itself, why do we see so many flying to a new country to fell once more the forest? I will not attempt to describe the various motives by which no doubt they are actuated.

I, Sir, have no permanent interest in the operations I have been directing, for the last few years; but it seems to me that if I were surrounded by those comforts which time alone can procure, I would not rashly abandon them to take up an abode in the wilderness, deprived at any rate for a length of time, of all those pleasures which long settled countries alone can afford. There is a genuine satisfaction too, in the breast of the true lover of rural life in cansing fertility by his skill and industry, in place of sterility which the man cannot feel who works among stumps and fallen trees.

I promised to give you an account of my cotton crop grown on my manured land this year, provided it was worth recurring to. I will conclude the communication by doing so. Notwithstanding the season has been quite unfavourable for our cotton crops in this part of the country, its product will be quite fair. It is not all yet picked out, but enough has been gathered to convince me that it will make at least twelve hundred pounds of seed cotton to the acre. There is no land to clear on this plantation, nor are there many uncleared acres in the county in which I reside capable of such a product. Had I wished to clear land, I could not have taken in more than thirty-five or forty acres with the force we employ, and have given to the other departments their proper share of attention: I manured about thirty acres this year. So I have almost accomplished already what I once looked upon as absurd, and I am not yet a master in the art of making manure. When land is to be cleared, it is necessary to employ the whole active force at command, not so in the making of manure. The labour generally necessary is scarcely missed—it glides on so smoothly when it is made "a separate and distinct business, and one worthy of attention."

W. A. G.

ART. XX.—*On the Cultivation of the Grape Vine; by* ABRAHAM GEIGER.

"Mount Gill, December 24, 1832.

Dear Sir,—I now undertake to answer your inquiries, and feel it a duty, as well as a pleasure, when I reflect that I may elicit further research, and draw out others of your correspondents who have added so much valuable matter to the *Southern Agriculturist*.

With respect to your first inquiry, whether I continue to plant, prune and arbour vines as communicated to you two years ago, or from further experience in the culture

of the vine, I may have changed my mind on these subjects; I answer, that my views are still the same. On these subjects so various and conflicting is opinion, that it is to be apprehended that the culture of the vine is looked upon as something mysterious. There is no more difficulty in understanding the cultivation of the vine, than there is in the cultivation of corn or cotton. If vines are planted in any manner, and but half cultivated, they will even then produce some fruit. So it is with corn, cotton, or any other article of produce; which if but half attended and badly managed, the planter cannot expect, nor will his fields yield him a full crop. There are various modes adopted by planters in planting and working the staple articles of this State, and with great success; and may it not be properly so with regard to the cultivation of the vine? Of this I entertain no doubt. Upon these subjects I cannot say any thing more in addition to what I have before communicated.

On the subject of the rot, the cause, and the preventive opinions of gentlemen are various. Some conceive that they have found the great *desideratum*, in planting vines in ditches three or four feet deep. This mode of planting is a departure from the order of nature. How often do we see them in their native state, put forth their roots to the surface, and frequently for many feet entirely exposed to the sun and atmosphere. To assist nature, and not to depart from, is in my view the correct course. Can it be supposed that to make a hole or ditch three or four feet deep, which is frequently terminated in a hard bottom, and which is to be filled up to within six or eight inches of the surface after the vine is planted, can be the proper plan. The vine will receive more water than if planted upon a plain surface. A quagmire will be formed at the roots to their great injury, and in wet weather the vine will be saturated with water for many days. I have seen in my vineyard grapes of vines that were planted deep, more affected with the rot than those of vines, the roots of which lay near the surface. My observation has fully convinced me, that very deep planting is attended with no advantage; and is founded upon an old mysterious mode of planting vines, contrived and intended to be made difficult and laborious.

Some maintain that high arbours is a preventive of the rot. I have observed that grapes rot equally as much on high as on low arbours. I consider high arbours as expensive, of great disadvantage in pruning the vines, and gathering the grapes, so much so, that I have at a considerable expense taken down my high arbours, and put up low ones. Some suppose that the rot is occasioned by the sun after a shower of rain; others that it is produced by a fall of too great a quantity of rain. My vineyards laboured under both of these disadvantages this year, and have yielded a full crop, making six thousand five hundred gallons of wine.

As I have never yet given my opinion to the public relative to the way in which I conceive the rot is produced, I will take this opportunity of doing so. The same cause which produces the rot in the grape, generates it in cotton, and I think it equally a matter of importance to the cotton planter, as to the vine planter, diligently to investigate the cause which annually detracts so much from his income. My opinion is, that the rot is generated by the Hessian fly, or a fly that much resembles it. By examination through a microscope, I am unable to discover any difference. It resembles in appearance the common indigo grasshopper. It is my opinion that this fly spawns on the surface of the grape, and on the cotton bole, and is a white transparent speck. If the atmosphere be in a condition to nurture and mature the spawn, the rot is the immediate consequence; if not, it produces only a deep brown speck on the surface, which neither injures the grape nor the cotton. These transparent specks may be seen on grapes by any one who will examine them. The air may be qualified but for a short time, say but for two or three days, after this there may be a suspension for a week, or for the balance of the season. Some years the rot continues without any abatement throughout the whole season. These insects may be seen among grape vines, and cotton plants in great abundance, and are remarkably wild and difficult to be caught. It has often been remarked, that grapes are not so subject to rot in gardens as in vineyards. Is it not reasonable to suppose that there may be some garden vegetable or flower, in the sweets of which, these insects prefer to revel and spawn on, or so noxious and offensive to them, as to banish them from the premises?

I most confidently recommend to all those about to engage in the cultivation of the vine, to put them up on the cheapest and most simple plan that can be devised. To keep their vines about two and a half feet from the ground, that the operations of pruning suckering, and gathering of the grapes may be conveniently done. If higher or lower, these operations will be found laborious. The Madeira and the Blands Madeira vines should be trained horizonally on railings. It will not answer to put them up to stakes, as the practice is in Europe.

I will now endeavour in some degree to answer your "Georgia Correspondent," who wishes to be informed by some individual who has been in the habit of cultivating the vine, what kinds prosper best in the Southern States. What kind of vines prosper best throughout the Southern States, I am not prepared to say. Those vines which might succeed and prosper finely on the sea-board, might not do so well in the middle country. And those vines which might succeed admirably well on the mountains, and in their vicinity, might not answer in either of the other sections of the country. The vines which would do well in the middle country of Georgia and the Carolinas, are the Madeira and the Blands Madeira. They are the only vines which I cultivate. The Isabella vine grows well, but is too subject to the rot, so much so, that I have had mine all dug up to the amount of eight thousand bearing vines. The Isabella as well as the foreign vines may succeed well in other sections of the Southern States, but in the middle country of this State, I consider them as not worthy of cultivation. Whether these vines will answer in other sections of the Southern States, must be determined by gentlemen living in those different sections.

With respect to the wild grape or those with which I am acquainted, I do not think them worthy of cultivation. I will give the common names of the three kinds, on which I have made experiments:—1st. the fox grape; 2d. the summer grape, and 3d, the winter grape. The fox grape grows in sand hill swamps and branches; it is inferior to the common buli's, and will not answer as a wine grape. The summer grape grows in abundance in the Southern States, particularly in hilly lands, resembling the Madeira grape, and does not improve by cultivation from the cut-

ting. I think it probable that this grape might be improved by grafting and regrafting to an equality with the Madeira. Comparatively speaking, these grapes yield but little expressed juice, and possess little saccharine matter. The wine may be characterized as rough and harsh. I am inclined to believe that the Madeira wine is a native grape of America, as well as the Blands Madeira and Isabella. That the Isabella by grafting and cultivation has been brought to its present state, from the fox grape, and that the Madeira grape has by the same process been brought to its present valuable state, as these vines resemble each other very much. The winter grape grows in rich swamp lands. My impression is, that this grape will never be cultivated as a wine grape.

If I have been fortunate enough in throwing any light on you friends inquiries, I shall feel myself gratified in doing so.

Yours, very respectfully,

ABRAHAM GEIGER.

ART. XXI.—*Account of an experiment in the Culture of Rice; by* A BLACK RIVER RICE PLANTER.

"January 16, 1832.

Dear Sir,—It is, I believe, the general opinion among rice planters, that they have not yet discovered the best mode of planting that grain, and that with a more judicious culture, the land might be made to yield much more abundantly. This has been my own conviction, and I have in consequence of it, appropriated a small field; the one alluded to in the following statement, to making experiments. I leave my plantation in the spring and do not return to it before the month of November, after harvest is over, and therefore, cannot say, that any experiment has been made by myself; but my overseer is a man of character, and altogether to be relied upon, and I feel a

perfect confidence in the correctness of any thing that he asserts, and as I think the interests of agriculture may be promoted by the publication of the subjoined facts, I have been induced to send them to you.

I am, Sir, with a hearty desire for the success of your useful journal, your obedient servant,

A BLACK RIVER RICE PLANTER.

"*Sir*,—I planted and managed the little field near your house in the following manner, viz:—First, I dug the land deep with the hoe turned the stubble down, flowed the field until sometime before I wanted to put the land in order for planting, say long enough for the earth to get properly dry; I then went in, mashed the land with the hoe, and trenched it with the hoe across the beds—the trenches twelve inches from centre to centre. I then had the seed winnowed very clean; it was not passed through a sieve, but ought to have been so done. I had the rice which I intended to plant the next day, put in a flat the night previous. I had water taken out of the river and poured into the flat until it was deep enough to cover the rice, it remained so until next morning, which was about twelve hours. I had the water thrown out of the flat, and the rice heaped in a bulk, and sowed *three* bushels to the acre; did not cover the rice; took the water on, probably for about three or four days; and flowed *deep* so as to *cover* all the *highest parts* of the land. I then kept the water on twelve days; and dried it gradually at night. The rice was at that time about three inches high. The field was then kept dry about five weeks; hoed twice during that time, and when found to suffer for water the tide was put on for *one* tide and immediately run off again. By this means the rice was always in a rapid state of growth. By this time the rice was large and strong. I then put the water on again, but not over the top, so as to stretch or weaken the rice. The third day, slacked the water down low, and freshened it often. Sent the hands in, and had the rice picked clean in the water once or twice; it was not dried longer than one tide could be taken off and the next put on, until it was dried to harvest. I was then particular and had it stacked by itself; thrashed by itself; kept the tally myself, when it was measursed; and I do

not hesitate to say that the field of two and a half acres measured two hundred and one bushels of rice, which is about eighty bushels and twelve quarts to the acre. I have every reason to believe it made more with that management than it would otherwise have done.

Your obedient servant,

T. T. K.

January 9, 1832.

By Rev.d Mr Bachman

ART. XXII.—*A successful method of raising Ducks; by* EXPERIMENTER.

"Charleston, February, 1832.

Believing it to be the duty of every individual to contribute for the benefit of society, any information he may possess, however small, and on subjects ever so humble; and having for several years past been in the habit of seeking recreation during those hours which were not devoted to severer studies and labours, in a variety of experiments on subjects of natural history, I propose giving you the result of some experiments in raising ducks, which were carried on during a number of years, and which finally eventuated in complete success.

It is sometimes beneficial to examine the causes of our failures, and it affords me pleasure at this moment in retracing the steps by which, after many disappointments, I gradually accomplished the objects to which my inquiries and experiments were directed. As an account of the process by which I arrived at these successful results, may not be uninteresting to those of your readers who devote themselves to rural pursuits, and who pride themselves on having a well stocked poultry-yard, I hope it may be no tax upon their time and patience, if I go somewhat into detail.

During many years I was struck with the general want of success which attended the raising of this species of

poultry. Not one-sixth of the young were ever raised—they appeared to be subject to innumerable diseases. Those that escaped were stunted in their growth and did not arrive at full size till they were many months old. The general complaint among farmers and planters was, that this the most valuable of our poultry was a puny bird hard to raise and subject to many diseases. They could raise fowls and even turkeys, but there was no certainty with regard to the duck.

Desirous of investigating the causes of a failure in raising a bird which in its wild state is very hardy—which, although exposed to all the vicissitudes of the weather, raises large broods of young, I procured several ducks determined to pursue my experiments in various ways till I should either be successful or be satisfied that in a state of domestication, there existed obstacles to their successful rearing which no foresight or care could prevent.

At first I adopted the usual mode of giving them access to as great a body of water as I could provide for them in the yard. I therefore had an artificial pond made near their coops, to which they could resort as often as they chose; here they amused themselves at all hours of the day, in dabbling around the edges of the pool, and in swimming and diving in the water; but they did not grow—they were subject to cramps and fits, and one after another died, until I began to think that water was not their proper element. I varied their food—gave them rice-flour, corn-grist, boiled potatoes, hominy, bran, and many kinds of vegetable food, but with the same results—and of a hundred young that were hatched, I scarcely raised a dozen. I then began to mix with their food various medicinal herbs, believing that this might correct some deleterious properties of their food, but it was to no avail. I next procured the different varieties of ducks for breed, thinking that perhaps one kind might be better suited to the climate and to the confinement of the poultry-yard than another; but I was soon convinced that my want of success was not owing to my breed of ducks. Several years passed away and left me pretty much where I began, and I was almost ready to abandon any further attempts at raising the duck.

The thought at last occurred to me that in the food with which we usually fed this species of poultry, we departed

widely from nature, and that, although the old ducks in their wild state fed on rice and the seeds of various grasses that are found along the edges of the rivers, brooks, and ponds, yet, that at the spring of the year when the young wild ducks are hatched there are few seeds ripe, and it is questionable whether at that early age they feed at all upon grain or seeds. There appears in the digestive organs of these young birds something unsuited to this kind of food—it passes through them without affording much nourishment. I had ascertained by dissection that their gizzards were filled not with vegetable food, but with the fragments of small craw-fish, worms and various aquatic insects, as well as the spawn of fishes, and I determined in the following year to try the effects of animal food. In due time my young ducks were hatched, beef was given them at first, after having been chopped very fine; this they devoured greedily and eat it in preference to all kinds of vegetable food. The effect upon their health and growth was immediate and surprising. They appeared to grow faster than any other poultry—in a few weeks they were out of danger, and in a few months fit for the table. As beef was expensive I tried cheaper kinds of food, such as the haslet of animals, crabs, fishes, &c. The result was equally favourable. I was now satisfied that in the article of food the end is attained by simply following nature and giving the young ducks animal food.

But although my experiment was thus far favourable, I found that many of my young ducks died after having been suffered to go in the dews and water, and that after many showers of rain they became thoroughly wet, and that when showers were succeeded by hot suns, they were subject to a disease of some apoplectic character, or a *coup de soleil* which killed numbers. Here I was much puzzled. I had succeeded in one instance by following nature, but I found that I could not carry my theory through, and that water affected the domesticated duck very differently from what it did the same bird in its wild state. The fact was not unknown to me that the down of young wild ducks is almost impervious to water; they are exposed to dews and rains—they dive to the bottom of pools and streams, and live in the water; yet they always keep dry—an oleagenous substance is spread over their feathers, from which the water glides off instantaneously

and leaves the bird dry during all weathers. Not so with the young of the domesticated duck. Owing, either to the confinement of numbers in a small space, where their down becomes ruffled and displaced, or to their not being able to procure that kind of food which in the wild state is favourable to the secretion of that peculiar oil which is found contained in the glands of birds, and which serves to lubricate their feathers and protect them from the wet, the down of the young tame duck soon becomes thoroughly wet, and when this is once the case, it is subject to various diseases and is difficult to raise. To accommodate the young duck to that artificial state into which it had been thrown by domestication, I found it necessary to adopt some mode by which during the first few weeks of its life, (the only time in which it requires much care) it might be preserved from the effects of that element, which in its native state is almost its only residence, and furnishes the means of its subsistence. A little reflection enabled me to guard against the inconveniences and dangers which result from this state of domestication. I had my coops built pretty large and tightly shingled, so as to be impervious to water. The young ducks were not let out in the morning dews till the sun had dried the grass, and the vessels in which their water was placed were railed over, so that they could drink by inserting their bills between these little railings, but were prevented from getting into the water. After following these simple directions with regard to food and shelter, I found that by a little attention of a servant, I could supply my table with ducks the whole year round—that I seldom lost one in twenty, and that they were free from all diseases. I raised from one hundred to three hundred ducks per year, and now found that they were the easiest of all poultry to raise. I communicated the result of my experiments to my friends. Those of them who had the disposition—the patience and industry followed my directions, and in every instance met with the same success—I have their assurance, that they can now raise ducks in any numbers, and some of them have for the last two or three years supplied our markets with from three to five hundred ducks of the largest size and finest flavour.

After having carried my readers through this, perhaps to them, tedious detail of experiments which cost me much

time and attention, but for which I was more than repaid by the successful result, I shall now proceed to give, under different heads, such simple directions as will enable our planters and farmers to supply their tables with this kind of poultry, which might be an object to those who are in the habit of supplying our markets.

1. *The Species and Varieties of Ducks best adapted to the purpose of breeding.*—The only two species of ducks that are raised in this country are what are commonly called the English duck and the Muscovy duck. The English duck is a descendant of the wild duck that visits us every winter in such numbers called the Mallard *(Anas Boschas)* is found also in Europe, and breeds in England, although not the largest it is certainly among the finest flavoured ducks in the world. The flavour of the famous canvass-back duck *(Anas Vallisneria)* that is found so numerously in the Chesapeake, and more recently in the Santee, and at the mouth of the Savannah river, is no doubt superior to it, but it is supposed that this is owing to the peculiar kind of root on which that bird feeds, believed to be the *Valliseneria Americana*—and that were it fed on common food its flavour would not be superior.

The English duck, which is so common in our yards, has from its long domestication, run into a number of varieties, which differ so much from each other as to appear like different species; they are of different sizes—of a variety of colours, and some are tufted. The variety to which I have usually given the preference, goes by the common name of the Madagascar duck, is distinguished by its being of the largest size—having a pretty long neck and almost invariably a light streak above the eyes, and usually a small streak extending from the lower part of the upper mandible to below the eye.

The Muscovy duck *(Anas Moschata)* is another duck more recently introduced, but which is now very common, and is well deserving a place in our poultry-yards. It was formerly, by most writers, considered as coming from the Eastern continent, but is now well ascertained to be a native of South-America. This duck, in our Southern climate is, perhaps, more hardy than the other—sets more steady on its eggs, and lays in the spring and fall. A mongrel breed between this species and the English duck is easily produced, and has become very common; but

these, though they are good layers, are unable to propagate their species.

There are other species of ducks, which the curious in these matters have partially succeeded in domesticating. I once saw a fine flock of the Gadwall duck *(Anas Strepera)* which an individual in the upper parts of the State of New-York, had succeeded in raising from ducks which he had captured, and which bred freely in his yard, and made no attempts at flying away. Our beautiful summer duck *(Anas Sponsa)* breeds freely in some parts of France and in the Zoological Garden in England. But it is very probable that the two species above mentioned are as well adapted to our purposes as any other, and that for many years they will be the only ones which will be generally kept in our poultry-yards. One drake will answer for five or six ducks—where mongrels are to be bred, place in a separate yard, one Muscovy drake to four English ducks.

2. *The best mode of procuring an abundance of Eggs.*—When ducks are raised in the country and have access to rice-fields, ditches, ponds, and the borders of rivers, they find food best suited to them and generally lay early and freely—but where they are necessarily kept in yards and do not possess the above advantages, it will be necessary to adapt their food to their situation. A mixture of any kind of animal food with their rice-flour, corn-meal or grist, given them regularly and plentifully three times a-day, will enable you to procure a great abundance of eggs; where this is neglected, your English ducks will lay but sparingly. I have observed that animal food is not so necessary to the Muscovy duck, but that they will generally lay pretty freely on being fed on grain alone.

3. *Setting and hatching the Eggs.*—The English duck, although a good layer, is very careless about hatching its eggs until late in the season. I have invariably used the common hen for that purpose, and when the young ducks are removed as soon as they are dry, their foster parent will set again on other eggs, and I have thus known a single fowl to bring out three and even four broods of young ducks in succession. In that case she should be repaid for her faithfulness by being richly fed. The young ducklings in this climate leave the shell on the twenty-sixth day—the Muscovy set a few days longer. A fowl

of a tolerable size will cover from thirteen to fifteen eggs. After the eggs have been four or five days under the hen, you may in the evening examine the eggs by the light of a candle or lamp—place the eggs longitudinally between the fore-finger and thumb—if the egg is likely to hatch it will be of a dark colour, with streaks of red frequently perceptible, and the cavity on the thick end will be somewhat enlarged and transparent. If it is a clear egg, it will be wholly transparent, and it ought to be removed at once, and if it has not been too long kept in the nest it is still fit for use. In this way when several hens have been set nearly at the same time, it will frequently be practicable to remove a sufficient number of clear eggs, so as to place a fresh setting of eggs under one or more of them. The Muscovy duck sets faithfully, and may as well be permitted to hatch her own young.

4. *Method of destroying Fowl-Lice.*—The insects which infest the setting hens may be easily destroyed by thoroughly sprinkling the nest, and wetting the fowl even to the skin with a strong decoction, made by pouring hot water on a good handful of common leaf tobacco, mixed when cold with a table spoonful of spirits of turpentine, and double the quantity of gunpowder. It will be well also occasionally to take away their old nest and make a new one of fresh hay or straw.

5. *Duck Coops, Food, and manner of rearing the Young.*—Let your coop be made pretty large, say three or four feet in length and three in depth—let it be well shingled so as to exclude all water, and have a good pitch towards the front—let it be tight on three sides and barred in front with a slide below the lower bar, so as to retain the ducks in unfavourable weather. A space of ten or twelve feet square, formed of commom boards set up edgewise will, when you have not much room in your yard, suffice for fifty ducks. Keep making coops in proportion as your ducks increase in numbers, and endeavour to keep the different sizes separate. The first brood, early in the spring, requires for a few days the warmth of the hen's body, and she should not be made to take care of more than twenty or thirty—a little later in the season the young that are then hatched do not require the services of their foster mother, and may from the beginning be placed in a coop by themselves to the number of fifty. Young

Muscovy ducks may be treated in the same way, and they and the Mongrels and English ducks may all be indiscriminately reared together.

As soon as your young ducks are hatched, let them be placed together for a few hours in a basket containing some warm inside lining, and when they have sufficient strength place them with the hen in the coop—feed them with meat or animal food of any kind chopped fine with a common chopping knife—for convenience I have usually had it boiled—a little rice-flour or corn-meal may be mixed with it, and the latter may be increased if you have but little meat—let this be continued for three weeks, and they are out of danger and can be raised on any kind of food; still it is to be observed that ducks will in all cases thrive better on animal food, and where this can be conveniently obtained, it may as well be given them. Those planters who live near our sea coast, by running a tight board fence across any small branch of salt water, and placing in the centre a fish-trap made of laths, can easily procure a sufficient quantity of fishes and crabs to feed all their young poultry. A man with a cast-net could in half an hour do the same. I have known persons in the interior of the country substitute squirrels, rabbits, and even venison—and one gentleman fed his young ducks on the flesh of alligators, thus rendering that which was a nuisance, subservient to his profit. When your young ducks begin to be tolerably feathered on the sides, which will be in five or six weeks, they may then be turned into the common poultry-yard, always bearing in mind that those which are best fed and obtain most animal food thrive the fastest.

I have not treated of diseases to which ducks are subject, since by the above treatment I have generally found them healthy.

As this is a long essay and may be two great a tax on your readers to peruse, I would give, in a single line, the substance of my directions for the successful rearing of young ducks.

Give them animal food and keep them dry.

EXPERIMENTER.

ART XXIII.—*Account of an Agricultural Excursion made into the South of Georgia in the winter of* 1832; *by the* EDITOR.

It is one of the unfortunate characteristics of our clime, that danger attends all excursions into those parts of our country where the soil is sufficiently rich to reward the labours of the husbandman, hence, it is almost impossible in some parts for even the proprietor to superintend his concerns throughout the year, and consequently, at least, for five months he is under the necessity of confining himself to giving orders based on the reports of others, or at most, on an occasional and hasty inspection. There can be no doubt but this state of things materially retards our progress towards improvements, and gives to our plantations that air of careless negligence, which may be pardonable in a newly settled country, but which ought long since to have passed away from all of the Atlantic States. But although it is extremely dangerous to reside on a large majority of our plantations, yet fortunately it has been discovered, that settlements can be made in our pine-lands, to which the planters can resort during summer and enjoy all the blessings of health, whilst at the same time they can visit their plantations sufficiently often to inspect all the operations carried on, and direct and control the whole. Such settlements of late have become numerous, and our planters have experienced much benefit from resorting to them. But whilst the planter residing at one of these pine-land settlements, has it in his power to visit his own plantation and those in the neighbourhood, yet he is confined by the inhospitality of our climate from extending his excursions into other sections of the country during this period, and seeing the operations as carried on there. Thus does he loose the opportunity of gaining much useful information, which his personal inspection, would enable him to obtain. All these visits, therefore, necessarily take place in the winter or early in the spring, at which time there is comparatively little to be seen and few occurrences take place to suggest new ideas or improvements.

Should a stranger visit us, he must do so at that season, of all others, the least inviting in the country, and

when he does come, he sees but little from which he can form any opinion of our state of agriculture. It is only those who having been brought up among such scenes, and been long familiar with them, can detect differences in the modes of culture, or some of the other operations of the place, which may cause them to institute inquiries, and enable them to compare these with those they have been accustomed to. Still this is far from being satisfactory, yet, being the best we can do, we must rest satisfied with it. In the agricultural excursions which we have made, we have laboured under some of these disadvantages; and if, therefore, they should not convey all the information which might be expected, we hope our readers will bear in mind, the seasons at which they were made, and the impossibility of making them at any other.

On the 24th of November, 1832, we embarked on board of the steamboat William Seabrook, and after a pleasant passage, arrived at Savannah the next morning at eight o'clock. We remained but one day at Savannah, intending to give this place a better examination on our return. Early on Monday morning we took the stage, and by evening were safely lodged in Darien. We saw nothing on this route worthy of special note. The road was most excellent, passing over a variety of soils.

From Darien we proceeded to "*Hopeton*," the residence of J. Hamilton Couper, Esq. and paid a visit to "*Champney's and Butler's Islands.*" From whence we proceeded to "*Sapello Island*," the residence of Thomas Spalding, Esq. and with a description of which place we intend commencing the account of this excursion, leaving the other places until our return, as we again visited each of them. A boat and hands having been kindly sent for us, we proceeded on the 4th of December, from the residence of Dr. Tunno, on Champney's Island to Sapello, a distance of fourteen miles, and which we reached a little after 12 o'clock. We ought, perhaps, to premise, that the Altamaha river for some distance from its mouth, is filled with islands, some of them of considerable magnitude, and most of them extremely rich. The river is wide even opposite Darien, or rather it is divided into several branches, each of which might be considered a good sized river. Darien is situated on the northern branch, and most of the rice plantations, which we shall have occasion to notice are

either immediately opposite, (embracing all the branches of the river) or a little above. Below Darien, the action of the sea-water is perceptible. The islands are soon passed and nothing but mud-banks, covered at first with coarse grass, peculiar to brackish water, and finally terminating in marsh, are to be met with. At its mouth the river is very wide from the northern to the southern side, which we shall have occasion to notice hereafter. The afternoon and evening of the day of our arrival, was passed in most agreeable conversation with Mr. Spalding, whom we were glad to find without company. The next morning we rode out to view the southern part of the island, occupied by Mr. Spalding, who owns a large portion of the island, the remainder is owned and occupied by Dr. Rogers, whose plantation we had not the time to visit.

Mr. Spalding's residence is situated at the extreme south end of the island, in a beautiful grove of live oaks. On passing from among these, the spectator who visits the island for the first time is struck with the peculiar appearance presented to him, instead of meeting with a thick growth of trees, such as is common on all sea-islands on our coast, he suddenly finds himself in a prairie, extending to the north almost as far as can be seen, skirted on the east and west with a low growth of live oaks and other trees, whilst the intermediate space is broken here and there, with small clusters of trees. This island is situated at the mouth of the northern branch of the Altamaha river, and is about ten miles long and two and a half miles in its widest part; it contains about ten thousand acres above the flowing of the tide, made up of hummock lands, covered with live oak and pine, to the extent of two or three thousand acres, and at least three thousand acres of prairie lands, such as we have described, and which are considered fertile and are cultivated in cotton and corn. This land appears to be made up of what seems to be a rich vegetable mould, in some places, six feet deep, resting on white sand. In its uncultivated state, it is thickly covered with various grasses and affords a fine pasturage; but when under culture it becomes so friable, that it is impossible to ride in the fields, except in the tracks beaten hard, by the negroes passing and repassing. The attempt to ride in any other part would be attended with great inconvenience if not danger, as the horse would im-

mediately bog. We are not aware whether this is the case during summer, when the soil has been dried by the sun, but was certainly the case in those fields we rode in, which were at the time somewhat, in a moist state.

In our morning ride we passed through a considerable portion of this prairie land, and visited the fields of sugar cane and cotton, and the establishment for manufacturing sugar, consisting of mill, boiling and curing-houses, all made of tabby. These are all at a distance of at least three miles from the mansion, with the exception of a small cotton field near the house. The intermediate space is principally prairie lands. On our return, we retired to the library, and as the day was disagreeable, we employed ourselves in obtaining the following particulars from Mr. Splalding, which we noted down at the time.

"The agricultural products of this island, are cotton, 'sugar, corn, &c. On this island was the first cultivation 'of cane for the production of sugar within the Atlantic 'States—here the growth of cane for that purpose was be-'gan in 1806, and has been continued ever since. The pro-'duct of sugar could not be taken for the last twenty years 'above 700 pounds. In cultivating cane, the land is form-'ed into low ridges, occupying the space of five feet: a 'broad trench is opened along the centre of the ridge, into 'which are laid two continuous strings of cane, four or 'five inches apart. It is covered two inches deep. As 'early in March as possible, (the time of planting having 'been in January and February) the earth is loosened 'over the cane plants, so as to give greater facility in their 'coming up; and the carts having been employed after 'the completion of the crop, in carrying out and deposit-'ing in every quarter of an acre, such manure as may 'have been gleaned from the cattle pens and otherways, 'the smaller hands, if there has been any interval of time 'for the operation, are employed in strewing, some small 'portions of manure, over the ridges ahead of those em-'ployed in loosening the soil. If we have not had time to 'perform this operation, before the first stirring, we rarely 'can accomplish it before the first of June, for our other 'crops begin to press upon us soon after the beginning of 'March. In preparing the cane-land and planting it, we 'may take in round numbers for listing, bedding and plant-'ing, sixteen labourers to the acre, exclusive of a few old

'hands employed in stripping the cane-plants and examin-
'ing them, and the carters who are employed in taking
'them from the field where they have been deposited in
'autumn, to those fields which are now prepared for their
'reception. It may be understood in the general, that
'such is the temperature of the climate of Sapello, that it
'is the tops of the canes that have been previously manu-
'factured and not the bodies that are employed for seed of
'the next year. This course is not generally pursued in
'Georgia, elsewhere than on Sapello, and is sometimes
'attended with loss even there, as was the case last winter.
'We give the sugar-cane after the first operation in spring,
'of loosening the soil over it, the same number of hoeings
'we give our cotton fields with the same expense of labour.
'This, however, is a bad course, the plough appears to be
'peculiarly adapted to the sugar-cane, it opens and pulve-
'rizes the land at that season when it particularly requires
'it, much more radically than the hoe can do: local causes
'have prevented its introduction on this island.

"The cane juice has generally reached seven degrees
'of Beaume's hydrometer by the first of November, the blue
'ribban cane sometimes by the fifteenth of October.—
'Whenever this is the case, your harvest should begin, the
'earlier the better, because the sooner you begin, the
'more time you have for the deliberate manufacture of
'your sugar, a matter of no small moment in the opera-
'tion, and again, because severe frost sometimes deterio-
'rates your juices from the seventeenth to the twenty-
'fourth of December. Fifty hands are employed per
'diem, in taking in and manufacturing from two to three
'acres of cane, according to its qualities; twenty hands
'are employed in stripping, ten hands in chopping or cut-
'ting down, ten hands with carts and loading of carts, and
'about ten hands about the mill and boiling-house, of
'course the carters and out-hands render some assistance
'at night to those in the boiling-house.

"Having found from long experience that a vertical
'cattle-mill would not express the juices from the blue cane
'sufficiently, and not finding it convenient to procure a
'steam-engine for the purpose, it was determined to erect
'a horizontal water-mill, excavating for the purpose about
'five acres of marsh land, eighteen inches below the sur-
'face of high water, so as to be able to work with neap-

'tides, a few hours. This mill is connected to the water-'wheel simply by a coupling box, and will be all-sufficient 'in common seasons, to take off from one hundred to one 'hundred and fifty acres of cane; this mill with its coup-'ling apparatus, was delivered from the West-point foun-'dary, for twelve hundred and eighty-six dollars, payable 'in six months.

"There is nothing new to be added on the subject of 'preparing sugar to what has been already written. We 'are in hopes of improvement, but must wait for the result. 'It may, however, be interesting to know, that the sugar-'cane has travelled up the Altamaha river, and its tributary 'streams from Darien to Milledgeville, and from Darien 'to Macon, until every log-house in this space has its sweets 'in abundance. However poor the individual may be, how-'ever limited his labours, some portion of this labour is set 'apart for this purpose. His little wooden mill and his pots 'set in clay; give him comforts which a few years back he 'little dreampt of. You may sometimes see the younger 'branches of the family at the end of a long lever turning 'the mill, while the elder are supplying it with cane, car-'rying away the juices and boiling it into syrup or sugar. 'A few years back small stills were common to be seen 'through the country; the peach orchard being almost the 'only object of luxury within their reach, now the still has 'given place to the sugar-mill and sugar-boiler, and the 'exchange must assuredly be beneficial to the people."

It is very gratifying to learn, that the sugar-cane has extended so far, and that it is likely to prove so beneficial as we are informed it is. The cane is cultivated, we understand, to a considerable extent, in the interior of Georgia, commencing from the sea-board, that is, scarcely a farmer is now found, who has not a small patch—even the pine-land, if well manured, produces sugar of an excellent quality. We beg to be understood, however, as stating that it is not grown as a crop, but merely to supply their own wants, for this purpose it can be cultivated, but would be a loosing business if attempted on a large scale for market.

Mr. Spalding has partly erected, and will have in operation during the next season, a set of works for boiling sugar in vacuum, which will enable him to manufacture it

of a superior quality, as it has been satisfactorily ascertained, that the improvement, by this process, is very great.

The varieties of cane cultivated on this island are the red (sometimes called the "blue") riband, the yellow riband, and the Otaheitie. The first yields the richest juice, but is so hard as not to be easily crushed, and therefore wooden rollers cannot express all the juice it contains. The second yields more readily to pressure, but is so tender as to be easily destroyed by frosts; the third yields more juice than these, but contains less saccharine matter than either. Mr. Spalding having communicated through the *Agriculturist*, at different periods his mode of manufacturing sugar, we will not detail it here, but refer our readers to these communications.

In the course of conversation, Mr. Spalding gave us the following account of the early culture of sea-island cotton, and his present mode.

"Having been an eye witness, although very young, to 'the first introduction of long-staple cotton into the United 'States, the changes the cultivation has gone through, are 'distinctly in remembrance. The cotton plant growing 'large, particularly on its first introduction into new soil, 'it was believed that it required great space to extend its 'limbs in, and to ripen and perfect its fruit. It was not 'known, that like all other oily seeds, vegetation is a little 'doubtful, and the plant when first coming up peculiarly 'tender and subject to many accidents. Unaware of these 'circumstances, the first cultivators deposited their seed in 'holes made on the surface of the fields at from five to 'eight feet each way. The consequence was, that even 'in the best soils scarce a fourth of the fields were covered 'with vegetation—the crops could in the nature of things 'under such circumstances be, but very small. The ridge 'husbandry was but little known in any country at that 'time; in truth, modern agriculture owes its introduction 'to Tull, but his books and his system passed but slowly 'through his own country, and reached this at a still later 'period. The first application of the ridge husbanbry 'to cotton ever remembered, was by Mr. Couper and Mr. 'Spalding the elder, of St. Simon's, and at St. Simon's. 'Still, although more of the seeds deposited in the earth 'grew, the old prejudice, of the plants requiring great space

'remained, and the product from even the best lands was 'limitted. Accident brought a Bahama planter in the year '1794, to Georgia, he was a respectable kindly old man, 'who wintered with some of the cotton planters of that 'period. He was advising all of them to plant their cot-'ton a great deal thicker: none of them, however, would 'take his advice or opinion, except a very young man com-'mencing his operations on the south end of St. Simon's 'Island, who adopted it in its fullest extent—he drilled his 'cotton along the ridge; he left the stalks to stand at every 'six inches; he adopted the West-India mode, and topt it 'at from twelve to sixteen inches in height. The soil was 'very fine and new; the season was favourable; the crop 'was limited to sixty-five acres:—the result was three hun-'dred and forty-one pounds of clean cotton to the acre. 'The revolution in the culture of cotton was wrought, 'every planter on St. Simon's Island followed the example 'of drilling, and leaving the plants to stand within six or 'eight inches in the row. From that period, viz. 1795, 'the same system has been pursued on St. Simon's, with, 'perhaps, as great results as to the quantity of cotton, as 'has been met with in any other part of the Southern 'States.

"The cultivation on Sapello does not differ materi-'ally from the course that was pursued on St. Simon's: 'perhaps the ridges are made a little higher than they 'usually are elsewhere. The only novelty in the cultiva-'tion has been in making the ridges in prairie or low 'lands, permanent and unchangeable for a series of years. 'The cultivation in that description of land is continuous, 'alternate rows of corn and cotton occupying the field, and 'the corn succeeding to the cotton alternately each suc-'cessive year. No one ridge, therefore, is occupied by 'corn or cotton more than one year; and where the soils 'are rich and deep enough, whether they be the clays 'of our river lands, or the vegetable deposits to be found 'in our prairies or swamps, the system appears equally 'available, and in either of those lands without some ex-'traordinary cause intervening, twenty bushels of corn, and 'one hundred and fifty pounds of cotton might reasonably 'be expected from the acre—neither the growth of the 'corn or the cotton, has been sensibly affected, either in 'the river or the prairie lands, by the beds having con-

'tinued permanent for eight years, while much labour is 'unquestionably saved, by being exempt from throwing up 'of heavy ridges every spring. But this is not all, the 'lands from being turned over every year, whether they 'be clays of the river or the vegetable moulds of the 'prairie, become too light and too easily washed down, 'and waste away by the heavy rains of summer, and as it 'is believed, more readily produce *blue* cotton, or large 'stalks without pods. Our operations on these lands is in 'the spring, to list down as light as possible the weeds that 'spring up in the months of February and March, so as 'to clean and bare the ridge. The ridge is then carefully 'trenched, and whether planted in corn or cotton, the 'seeds are dropped along this trench and covered over 'and trod down carefully with the foot. If the cotton 'grows very luxriantly in the land, it is thinned down to 'about a stalk in every ten inches. The corn is left, if 'it can be done at ten inches apart in the trench, so that 'we have in fine, quite as many stalks of corn for our half 'crop as planters generally leave for their whole. But we 'have great evils to dread in both these descriptions of lands 'in setting our crops in the spring, the cut-worm as regards 'cotton, and the cut-worm and the rats as regards corn. 'The best remedy found for both of these evils has been soak- 'ing the seeds of both corn and cotton, to give them as 'quick a germination as possible, then allowing them sim- 'ply to dry, pouring over both the cotton seed and the 'corn, a mixture of lime water, stirred up into a white- 'wash. When this operation has been well performed so 'as to coat over the seeds with the whitewash, we have 'thought it almost a radical remedy, but it requires care 'in the operation, or it is in a great measure useless. As 'early as possible after the corn and cotton have reached 'three or four leaves, we dress up with care our ridges, 'cleaning up the intervals. Upon lands of this descrip- 'tion, though commonly planted a little later than higher 'lands, the period of cleaning and hoeing ceases at the 'same time, which is with us generally about the first 'week in July."

The cotton receives four hoeings, not including the drawing down preparatory to planting—they are all light, never deep and always upwards—the top of the ridges or beds are wide, and the plants instead of being placed

in straight rows, (as is usual in South-Carolina)—are scattered over the whole surface, and thinned out to from six to twelve inches, leaving them still without regularity. The thinnings are not begun before the plants are about six inches high; but when commenced are continued until the plants are left at the distance intended, care is taken that the final thinning shall not take place until the heavy rains in May have set in, sometimes it is not finished until the first of June. On the prairie lands, the growth of the cotton is from four to eight feet high—it is lower on the hummack lands, which are quite sandy. The finest quality is produced on the former.

Mr. Spalding keeps on this island four hundred and fifty head of cattle, of which ninety are working oxen. These have been regularly herded during the day, and penned at night for the last ten years. The manure thus acquired is all applied to the sugar-cane crop. The oxen were formerly used for the sugar-mill and carting, but now are employed in the carts only. The other cattle are kept merely for plantation use. No sheep are now kept on the island. A large flock was brought down and promised well, but were all swept off by the gale of 1824, which overflowed the island, doing considerable damage, from which the land has not even yet recovered.

We were shown a large grove of Orange trees, and some Date trees, both in a very unpromising state. The Orange trees had been very much injured by the severe frosts of 1830, '31 and '32, most of them have been killed to the surface of the ground, and many entirely. Previously they had promised well, and were generally about from fifteen to twenty feet high. One or two Date trees only had grown to any size, the situation did not appear favourable to them.

On the afternoon of the 6th of December, we left Sapello, for St. Simon's Island, of which we will, in our next, give such information as we collected.

(*To be continued.*)

PART II.

SELECTIONS.

Art. XVII.—*The General Management of the Horse.*

[FROM THE LIBRARY OF USEFUL KNOWLEDGE.]

(Continued from page 93.)

Rye Grass affords a valuable article of food, but is inferior to the tare. It is not so nutritive; it is apt to scour; and occasionally, and late in the spring, it has appeared to become injurious to the horse.

Clover, for soiling the horse, is inferior to the tare and rye-grass, but, nevertheless, is useful when they cannot be obtained. Clover hay is, perhaps, preferable to meadow hay for chaff; it will sometimes tempt the sick horse, and may be given with advantage to those of slow and heavy work, but custom seems properly to have forbidden it to the hunter and the hackney.

Lucern, where it can be obtained, is preferable even to tares, and saint-foin is superior to lucern. Although they contain but a small quantity of nutritive matter, that is easily digested, and perfectly assimilated; they speedily put both muscles and fat on the horse that is worn down by labour, and they are almost a specific for hide-bound. Some farmers have thought so highly of lucern as to substitute it for oats. This may do for the agricultural horse of slow and not hard work; but he from whom spedier action is sometimes required, and the horse of all-work, must have a proportion of hard meat within him.

The Swedish turnip is an article of food the value of which has not been sufficiently appreciated, and particularly for agricultural horses. Although it is far from containing the quantity of nutritive matter which has been supposed, that, like the nutriment of the saint-foin and the lucern, seems to be capable of easy and complete digestion. It should be sliced with chopped straw, and without hay. Thirty pounds of the turnips, with two or three quarterns of oats, and six pounds of straw, will be sufficient for a horse of moderately hard work. Hackneys have been kept on them with a less quantity of oats.

Carrots.—The virtues of this root are not sufficiently known, whether as contributing to the strength and endurance of the healthy horse, or the rapid recovery of the sick one. To the healthy horse they should be given sliced in his chaff. Half a bushel will be a fair daily allowance, and the two pounds of beans, and three pounds of the oats, may be withdrawn. There is little provender of which the horse is fonder. Some farmers allow a bushel of carrots with chaff, and without any oats; and the horses are said to be equal to all agricultural or slow work.

Potatoes has been given, and with advantage, in their raw state, sliced with the chaff; but, where it has been convenient to boil or steam them, the benefit has been far more evident. Some have given boiled potatoes alone, and horses, instead of rejecting them, have soon preferred them even to the oats; but it is better to mix them with the usual manger food, in the proportion of one pound of potatoes to two and a half pounds of the other ingredients. The use of the potato must depend on its cheapness, and the facility for boiling it. Half a dozen horses would soon repay the expense of a steaming boiler in the saving of provender, without taking into the account their improved condition and capability for work. A horse fed upon potatoes should have his quantity of water materially curtailed.

Furze has sometimes been given during the winter months. There is considerable trouble attending the preparation of it, although its plentifulness and little value for other purposes would, on a large farm, well repay that trouble. The furze is cut down at about three or four year's growth; the green branches of that and the preceding year are cut off, and bruized in a mill, and then given to the horses in the state in which they come from the mill, or cut up with the chaff. Horses are very fond of it. If twenty pounds of the furze be given, five pounds of straw, the beans, and three pounds of the oats, may be withdrawn.

It may not be uninteresting to conclude this catalogue of the different articles of horse food with a list of the quantities of nutritive matter contained in each of them; for although these quantities cannot be considered as expressing the actual value of each, because other circumstances besides the simple quantity of nutriment seem to influence their effect in supporting the strength and condition of the horse, yet many a useful hint may be derived when the farmer looks over the produce of his soil, and inquires what other grasses or vegetables might suit his soil. The list is partly taken from Sir Humphry Davy's Agricultural Chemistry: 1000 parts of wheat contain 955 parts of nutritive matter; barley, 920; oats, 743; peas, 574; beans, 570; potatoes, 230; red beet, 148; parsnips, 99; carrots, 98. Of the grasses, 1000 parts of the meadow cat's tail contain at the time of seeding 98 parts of nutritive matter; narrow-leaved meadow grass in seed, and the sweet-scented soft grass in flower, 95; narrow-

leaved and flat-stalked meadow grass in flower, fertile meadow grass in seed, and tall fescue, in flower, 93; fertile meadow grass, meadow fescue, reed-like fescue, and creeping soft grass in flower, 78; sweet-scented soft grass in flower, and the aftermath, 77; fiorin, cut in winter, 76; tall fescue, in the aftermath, and meadow soft grass in flower, 74; cabbage, 73; crested dog's tail and brome flowering, 71; yellow oat, in flower, 66; Swedish turnip, 64; narrow-leaved meadow grass, creeping beet, round-headed cocksfoot, and spiked fescue, 59; roughish and fertile meadow grass, flowering, 56; fiorin, in summer, 54; common turnips, 42; saint-foin, and broad-leaved and long-rooted clover, 89; white clover, 32; and lucern, 23.

The times of feeding should be as equally divided as convenience will permit; and when it is likely that the horse will be kept longer than usual from home, the nose-bag should invariably be taken. The small stomach of the horse is emptied in a few hours; and if he is suffered to remain hungry much beyond his accustomed time, he will afterwards devour his food so voraciously as to distend to the stomach and endanger an attack of staggers. When this disease appears in the farmer's stable, he may attribute to various causes; the true one, in the majority of instances, is irregularity in feeding.

* * * * *

When extra work is required from the animal, the system of management is often injudicious; for a double feed is put before him, and as soon as he has swallowed it, he is started. It would be far better to give him a double feed on the previous evening, which would be digested before he is wanted, and then he may set out in the morning after a very small portion of corn has been given to him, or perhaps only a little hay. One of the most successful methods of enabling a horse to get well through a long journey is to give him only a little at a time while on the road, and at night to give him a double feed of corn and a full allowance of beans.

Water.—This is a part of stable management little regarded by the farmer. He lets his horses loose morning and night, and they go to the nearest pond or brook and drink their fill, and no harm results; for they obtain that kind of water which nature designed them to have, in a manner prepared for them by some unknown influence of the atmosphere, as well as by the disposition of many saline admixtures. The difference between *hard* and *soft* water is known to every one. In hard water soap will curdle, vegetables will not boil soft, and the saccharine matter of the malt cannot be fully obtained in the process of brewing. There is nothing in which the different effect of hard and soft water is so evident as in the stomach and digestive organs of the horse. Hard water, drawn fresh from the well, will assuredly

make the coat of a horse unaccustomed to it stare, and it will not unfrequently gripe and otherwise injure him. Instinct or experience has made even the horse himself conscious of this, for he will never drink hard water if he has access to soft: he will leave the most transparent and pure water of the well for a river, although the water may be turbid, and even for the muddiest pool.* He is injured, however, not so much by the hardness of the well-water as by its coldness—particularly by its coldness in summer, and when it is many degrees below the temperature of the atmosphere. The water in the brook and the pond being warmed by long exposure to the air, as well as having become soft, the horse drinks freely of it without danger.

If the horse were watered three times a day, and especially in summer, he would often be saved from the sad torture of thirst, and from many a disease. Whoever has observed the eagerness with which the overworked horse, hot and tired, plunges his muzzle into the pail, and the difficulty of stopping him until he has drained the last drop, may form some idea of what he had previously suffered, and will not wonder at the violent spasms, and inflammation, and sudden death, that often result.

There is a prejudice in the minds of many people against the horse being fairly supplied with water. They think that it injures his wind, and disables him for quick and hard work. If he is galloped, as he too often is, immediately after drinking, his wind may be irreparably injured; but if he were oftener suffered to satiate his thirst at the intervals of rest, he would be happier and better. It is a fact unsuspected by those who have not carefully observed the horse, that if he has frequent access to water he will not drink so much in the course of the day, as another who, to cool his parched mouth, swallows as fast as he can, and knows not when to stop.

On a journey a horse should be liberally supplied with water. When he is little cooled, two or three quarts of water may be given to him, and after that his feed. Before he has finished his corn two or three quarts more may be offered. He will take no harm if this be repeated three or four times during a long and hot day.

It is a judicious rule with travellers, that when a horse begins to refuse his food, he should be pushed no further that day. It may, however, be worth while to try whether this may not proceed from thirst, as much as from exhaustion, for in many instances his appetite and his spirits will return soon after he has partaken of the refreshing draught.

Management of the Feet.—This is the only division of stable management that remains to be considered, and one sadly ne-

* Some trainers have so much fear of hard or strange water, that they carry with them to the different courses the water that the animal has been accustomed to drink, and that they know agrees with it.

glected by the carter and groom. The feet should be carefully examined every morning: for the shoes may be loose, and the horse would have been stopped in the middle of his work; or the clenches may be raised, and endanger the wounding of his legs; or the shoe may begin to press upon the sole or the heel, and bruise of the sole, or corn, may be the result; and, the horse having stood so long in the stable, every little increase of heat in the foot, or lameness, will be more readily detected, and serious disease may probably be prevented.

When the horse comes in at night, and after the harness has been taken off and stowed away, the heels should be well brushed out. Hand-rubbing will be preferable to washing, especially in the agricultural horse, whose heels, covered with long hair, can scarcely be dried again. If the dirt be suffered to accumulate in that long hair, the heels will become sore, and grease will follow; and if the heels are washed, and particularly during the winter, grease will result from the coldness occasioned by the slow evaporation of the moisture. The feet should be stopped—even the feet of the farmer's horse, if he remains in the stable. No clay stopping should be used, for it will get hard and press upon the sole; cow-dung is the best stopping to preserve feet cool and elastic; and before the stopping is applied, the picker must be run round the whole of the foot, between the shoe and the sole; to detect any stone which may have insinuated itself there, or a wound on any other part of the sole. For the hackney and hunter, stopping is indispensable. After several days' hard working it will afford very great relief to take the shoes off, having put plenty of litter under the horse, or to turn him, if possible, into a loose box; and the shoes of every horse, whether hardly worked or not, should be removed or changed once a month.

Art. XVIII.—*Adapting Plants to Soil.*

[FROM THE NEW-ENGLAND FARMER.]

(Concluded from page 96.)

Sometime since a gentleman brought me some turnip roots that had failed for several years; and the potatoes had equally been vitiated the preceding year. When I dissected the plant, I found the wood or sap vessels of the roots were rotted off, and

in their steed a number of large bladders of putrid water remained as a sort of swelled and distorted root. But almost all nourishment from the earth was suspended, and the leaves alone retained a sort of life, from the nutriment they received from the atmosphere. The potatoes were nearly in the same condition, the roots all decayed, not forming any bulbs; but when peas and vetches were placed in the same ground, they grew remarkably well. Now this is certainly a proof that a plant can be destroyed by a decided aversion to the soil in which it is placed; which will, notwithstanding, agree with many *other vegetables*; and that the plants of a poor soil can be as much hurt in a rich one, as the plant of a rich in a poor soil.

"I have also known the same disorder seize trees, on being put into ground too rich for them. A friend of mine having just made a garden, which was not yet walled in, left a row of the *salix caprea*, [a species of willow,] in a hedge to shade a walk. Being desirous of having very good vegetables he manured the ground to the most excessive degree, *even to the edge of the trees.* In two or three years the trees began to decline, and at last got so bad that he consulted me what he should do with them. I advised the taking one for examination. I found the most of the wood of the root decaying, while the side radicles were turned into putrid bulbs. We uncovered all the rest of the trees, and flung dry sand on them, mixing it with the earth that surrounded the roots: we saved all *but three.*

"In tracing the various expedients necessary to a plant put out of its natural earth, I shall first mention *manure* as the most considerable. In proportion as the ground is adverse to the *plant*, so much more does the farmer load it with the only remedy he is acquainted with '*dressing*' to enable the plant to shoot. If the manure do not afford the juices it requires, and which its natural earth would certainly have *bestowed*, the *crop fails;* then the quantity of seeds must be more than doubled, which creates a second expense.

"One of the principal parts of farming should be thoroughly to understand the soil of each field, and its subsoil, and the *sorts of plant* that suits that *peculiar ground*, that the farmer may be able to adapt them to the earth of which his estate consists, especially where, if he wants more variety, they are to be bought or exchanged with ease. The only desire of most cultivators is to make the farm answer in point of expense. This is all I mean by the plan I am suggesting—'that every plant will yield a vast deal more in its own soil, and will repay for buying and exchanging that which would not grow without too much expense.' How few are the plants which can possibly be wanted! ten or twelve at most: how easy, therefore, to suit each to its estate! A couple of different kinds of wheat for each soil; oats that

agree well with it, and clovers that are naturalized to it. There are some plants that all farmers grow, but that nature seems to have made *as substitutes* to each other for feeding cattle; I mean turnips, carrots, parsnips and cabbage; they each claim a different soil. The turnips do admirably in sand, the carrots in sand also, the cabbage on clayey ground, and the parsnips in good ground: as to potatoes, though preferring a *drained boggy earth* to all others, yet they are *so necessary*, they must grow where they can. But there is a terrible mistake in this country, in supposing they should be planted in dry ground; as to the potatoes (I have proved it by sixteen years' experience) will never be mealy, if not grown in tolerably *moist earth*. As to the others, one of them might be chosen as best suiting. It is true that a plant grows *sick* of the ground in which it is placed too frequently; because the peculiar juices are *exhausted*, which sustained and supported it. But a year's interim is sufficient to renew all, and restore the earth to its usual vigour; especially if a fallow intervene.

"A sand plant takes the greatest part of its nutriment from the atmosphere; it is therefore loaded with hairs of various shapes and figures, which, receiving their juices from the dews, &c. prepare them according to chemical affinity, and then permit them (as soon as completed) to run from the hairs into the plant; while the roots, which are often thick and large, but which have very few *radicles*,) are most incapable of taking nourishment from the earth, and therefore the plant depends almost wholly on the exposure to the heavens; and it is on that account, peculiarly necessary for those plants, that *aspect* should be most strictly attended to, and that they should be so placed as to face the east or southeast. To these plants the soil or earth is of less consequence than the aspect; and throwing away loads of manure is really expending money without cause or effect; since it will be of little use, except warming the ground, which assists most plants, but to do which only a small quantity of dung is necessary.

"A gentleman consulted me what he should do with his ground, plagued as he was with *tussilago* [colts-foot.] He had ploughed the whole five times without effect. I only advised him to dress it thoroughly with dung; and then, the next spring, throw on a quantity of fine sand, for the soil was limestone. In two years after, repeating this again, he had not a plant of the *tussilago* left, though for five years before, he had been labouring against it without effect: the dung killed the poor plant. Then the principle I wish to enforce in this letter is, that the plant *should be suited to the soil*, if the farmer wishes to save himself the expense of making the soil to be suitable to the plant."

Art. XIX.—*Out-Buildings.*

[from the American Farmer.]

" Woodside, (Del.) Jan. 30, 1832.

Mr. Smith,—Allow me to offer a few remarks upon the subject of out-building, it is one our farmers are generally too little interested in, but which in my opinion ought to command their earliest attention; I allude particularly to shedding for the stock, contrived so as to hold their provender at the same time from a covering for them I have myself given it a fair trial and am convinced of its importance; instead of building such very large barns as appears commonly to be the aim of our agriculturists, let them be of a sufficient size to hold all the grain and hay enough for the stock which is quartered under it, erect shedding connected with it of sufficient dimensions to allow all the animals which the provender will maintain to be kept under it, each having a separate stall; then they all fare alike, the coward as well as the master animal, and no hay is wasted, as each one can eat his own without being incommoded by the rest; the other, and I am sorry to say, by far the most general plan of giving them their hay in cribs, dispersed through the yards, is attended with great waste, as the hay from remaining in a bulk in the mow adheres together, is dragged from the cribs as they are constantly driving each other about, and always carry more or less with them, the most of which is dropt and trampled under foot, they also receive a great drawback from lying out at night, exposed to all weathers, obliged to make their beds where they best can, in the wet and dirty yards, (which they will always be in moderate and wet weather,) or if they have, as sometimes is the case, a shelter to go under, it will be occupied by a few of the master animals, leaving the others entirely unprotected from the weather; on my plan, all are sheltered alike, each one having a comfortable dry bed to repose on and allowed, unmolested, to enjoy his food and it. I believe in this plan one-fourth as many more may be kept in on the same provender; my corn fodder I feed in cribs, in the yard, which I give them at noon, but all the hay is eaten by them in their stalls. Perhaps it will now be proper to mention my plan of shedding—it joins with the barn on the west end, runs round the north and west side of the yard one hundred and thirty feet, forming an L, which protects the cattle entirely from the north and northwest winds, and leaves it open to the south, it is sixteen feet wide, a wall is carried up seven feet high on the back, with pillars next the yard, upon which the shed rests, the back from top of wall to eaves is nine feet, the front from top of pillars eighteen feet, is divided underneath into stalls eight feet nine inches long, and three feet nine inches

wide, (they are required to be narrow to prevent the cattle from turning after they are in their places,) each stall has a gate in front fastened with a wooden bolt, there is an entry back of them four feet wide, into which are funnels, convenient distances apart for putting down the hay; each stall has a crib, the width of the stall for both hay and meal, after putting the hay unto the cattle, by going over the entry with a rake, none need be lost or trampled under foot; this entry connects with the entry of the barn. With sheds and barn I stall sixty head, which at present is the number my farm is capable of maintaining. I have another shed, which connects with the east end of the barn, of the same width and height, but instead of opening towards the yard it is reversed and makes an excellent cart shed. Also under the same shed, a room is petitioned off for a tool-house, in which are kept all our small working implements, so that when a hand is sent to a job, he need not spend half an hour or more in looking for a tool, which has been left where it was last used for want of a proper place to put it away. Convenient to the barn is a wagon-house, divided over head into two rooms, one fitted up as a work shop, (which is indispensable) the other a receptacle for many different articles; against this building is another for our larger tools, such as ploughs, harrows, &c. My corn cribs are on each side of the gangway into the barn—which is much more convenient for getting it out, but is rather more liable to be disturbed by vermin, under this is a cellar for ruta baga, which joins with the entry of the barn, trap-doors are fixed in the floor for shooting the roots directly down.

I have written much more than I at first intended, and for fear of becoming tiresome, I will conclude, with my sincere wishes for increasing patronage to your very valuable paper. S.

Art. XX.—*On Planting a Flower Garden.*

[FROM THE GENESEE FARMER.]

Having in last week's Farmer offered a few remarks on the formation of a flower garden, it may now be proper to give some directions for planting the various compartments. The most efficacious plan for accomplishing this, and making the thing intelligible to every one, would be by giving a plan for a flower

garden, with a list of plants, and references to the proper cite in every border, clump or parterre. Such it is in contemplation to publish in the Farmer at some future period; for the present, a few general hints must suffice. There are two systems which may be followed according to taste or fancy—first, by planting the borders, &c., indiscriminately with various plants so selected and distributed that they will regularly succeed each other in the time of flowering—exhibit a variety of colours, and a difference in height. The other method is by planting only one kind or class of plants in each division. Whichever system is adopted, they may be so furnished, by a judicious selection and proper arrangement, so as to display great beauty and taste. Whatever may be the arrangement decided upon, the plants generally selected for a flower garden are chosen for the beauty of their appearance, for being odoriferous, or for possessing some such distinguishing characteristic. They are composed of perennial, biennial, and annual plants. The former class are plants generally of very easy cultivation and easily propagated, which is done by dividing the root, by suckers or shoots thrown up from the roots, and by seed. Others are multiplied by cuttings of stalks, shoots or roots, and suckers, but the first mode is applicable to nine-tenths of hardy herbaceous plants. Biennials and annuals are generally grown from seed, in the selecting of which, it should be chosen from the flowers which expanded first, that seed always being the strongest.

If a mixt flower garden, border or clump, be the object in view, particular attention must be given to the selection of sizes, colours, and the different times of flowering. In planting the different clumps, a proportion of ornamental flowering shrubs may, with propriety, be admitted. The herbaceous plants should be such as to produce large heads or masses of flowers—an equal number of every colour, and so selected that some shall always be in flower during spring, summer and fall, with as near a proportion of the different colours as possible. All this can be effected with a very few flowers, so that none need be deterred from forming a flower garden, or properly distributing the various shades of colour, under the impression that many plants are absolutely requisite to effect it. Much more regularity, and greater harmony in colours, may be effected by a select few, than by introducing a great number of sorts into one clump. For then a less distinctive or marked character would be the result. There should be a proper system decided upon before a single plant is planted, which will prevent the border or clump from appearing a heterogenous mass, without meaning, without taste or design. In planting "*the mingled flower garden*," it is essential that the separate parts should, in their appearance, constitute a whole; and whatever be the *ground plan*, it will be

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no barrier, if proper attention be given to the mode of arranging the plants.

To plant a bed in the mingled style, suppose all the colours to be classed under four heads—red, white, blue and yellow—and suppose the bed or border admits of four rows in width. The lowest plants must be placed nearest the walk, margin of the border; the tallest in the back row, and the other two rows of an intermediate size, which will give the whole an unique and regular appearance.

Before planting is commenced, mark out the border in four rows lengthwise, and as many rows across the length of the border will admit of, which will give the cite of each plant exactly in the angle of a square, whose side may be eighteen inches. Then determine on the order which they will flower, and plant as follows:

red,	white,	blue,	yellow,	red,	white,
blue,	yellow,	red,	white,	blue,	yellow,
red,	white,	blue,	yellow,	red,	white,
blue,	yellow,	red,	white,	blue,	yellow,

and so on *ad infinitum*, so that with four colours, four sizes, and six times of flowering, requiring in all only ninety-six plants, a proper flower border can be formed; but when there are a greater number of plants, it may be extended to any length, and may include any number of species; the only point is, that those admited possess the desired requisites of time of flowering, height and colour, in each compartment. Such is decidedly the best plan for planting a border in mixed style, if the plants are to be examined only from one side; but if a double border, with a walk on each side, or a clump to be planted on a lawn and varied on all sides, then fix on the number of rows, keep the lowest plants round the margin and the tallest in the centre, adhering to the order of arrangement as given above.

For what is termed the "*select flower garden*," a different style of planting is adopted—planting only one species of plant in each bed, such as tulips, hyacinths, dahlias, ranunculus, anemonies, pinks, &c. This mode of planting is very simple, all that is requisite being only to plant them in beds of carefully prepared soil, and mix the colours as far as possible.

Autumn, after the plant has done flowering, or spring, when it begins to grow, are the proper seasons for planting and transplanting. The general culture is stirring the soil, enriching it, dividing overgrown plants, and filling up vacancies, keeping them in neat and proper order during the growing and flowering season.

Annuals are sown either in the spring or fall, generally at the former season; they are sown in rings or patches in the borders

or clumps, covering the seeds from an eighth to an inch, according to their size. Thin them out when they are about an inch high, and stir the soil occasionally. Stake and tie any that need support, which is all the culture they require.

ART. XXI.—*On the Culture of the Dahlia; by* JOSEPH HARRISON.

[FROM THE HORTICULTURAL REGISTER.]

The Dahlia is certainly one of the most splendid plants in creation; for whether the brilliancy and variety of colours in the flowers, the extent of its varieties, the duration of its blooming, or its majestic appearance when in perfection, be considered, it stands in each particular unrivalled, and merits a situation in every garden, from the palace to the cottage; and it is an additional recommendation, that it is easy of propagation and cultivation.

The best mode of treatment practised with the Dahlia, has repeatedly been requested through the medium of publications; and although I am not vain enough to think the method I pursue is the best in operation, yet, having been so successful as to flower the plants to the satisfaction of hundreds of persons who have viewed them, I venture, in a plain and brief manner, to give a detail of my practice; in doing which, I shall state the mode I have adopted in raising a number of handsome seedlings, as well as the subsequent culture.

New varieties are raised from seed, and with a view to raise the best and particular kinds, I have recourse to artificial impregnation. With a small pointed camel's-hair pencil, I take the farina from one flower to another. If I have a handsome compact flower, that I am desirous of improving in colour or size, I have recourse for farina from one of the colour or form desired; as it is very nearly to be calculated what a mixture of any two sorts will produce. The flowers I intend to impregnate upon, I cover with a fine gauze bag, a day or two before the florets expand. When the first and second tier of florets are expanded, I then impregnate them, and retain the gauze bag over them for a week longer, I mark by a small tally, the flower I have operated upon. In collecting the seed in autumn, I only gather the two tiers; the seeds from the outside tiers are always the finest, and ripen the best. The use of the bag, is to prevent any impregnation

from bees. When any flower is semi-double, I uniformly take them away; so that I neither take farina from them, or save them for seed.

The seed is sown about the first of February, and placed in a hot-bed frame; when sufficiently strong for transplanting, the plants are removed into small pots, one in each pot, and kept in a green-house or cool frame. At the end of May, they are turned out entire, into a deep and rich soil. These flower abundantly by the end of July, and by being forwarded as stated, the roots become perfected by the autumn, so as to keep plump, through the winter.

The method I pursue with old roots, is, to place them upon a moderate hot-bed, or in a mushroom-house, that has a little heat. I just cover the roots with some fine sifted rotten tanner's bark; in this they speedily push roots. I usually do this about the first week in February, which I consider quite early enough, as my plants get two or three feet high by the period for planting in the open border. I have seen some persons push the roots as early as the beginning of January, but in consequence of such being deprived of sufficient air, which could not safely be given at so early a season, they were generally drawn up weakly, and seldom bloomed well.

When the roots have pushed shoots about four or six inches long, I take them out of the bark; such roots as can be divided, now most readily do so. If any of the roots push more shoots than one, and I wish to increase the sort, I cut off each shoot, close to the old root; these I insert in pots, filled with fine light sandy soil, placing them round the sides of the pots, and put them in a hot-bed frame, or, I set them off upon a hot-bed, covered with four inches of suitable soil; in either case they will strike root in six or eight days. In cutting off the shoots close to the old roots, I find they strike much more freely than if cut crossways under a joint, in the upper part of a shoot; although there is a possibility of their striking under that mode of treatment. When the cuttings have pushed roots, I pot each into a separate pot. The soil I use for potting my Dahlias in, is a light rich one. When the Dahlias are potted, whether old roots or cuttings, I place them in a peach-house or vinery, till they push to eight or ten inches long, when I have them removed to a very airy situation in the garden, and where I can have them protected if required.

As soon as I judge danger from frost is over, which is seldom before the end of May, I turn the plants out entire, planting them in sheltered sunny situations.

The soil of my borders is a strong loam, eighteen inches deep. I manure the border well every spring, before planting, and at the same time add about an equal part of good fresh soil. In this they flower most profusely, particularly the plants raised

from cuttings; these do not grow so vigorous as the plants with old roots, but they flower far more abundant and compact.

The plan of training the plants to a fence, appears to me to be the best mode of securing them, for when tied up to stakes, the wind frequently twists the plants and destroys their tops, but the other mode secures them against all winds, and exhibits the flowers to the greatest advantage; three or four stakes placed angularly round the plant, and the plant tied to them, also answers the purpose.

When the blooming season is near its close, I lay about four inches thick of rotten bark or leaf soil, over the roots and for two feet round the stem of each plant; this is done to prevent the crown of the plant being damaged by sharp and sudden frosts. I have seen many Dahlias that were exposed, have the crowns so injured by sudden frost, as not to push at all the following spring, although the remainder of the roots was sound.

When I take up my roots, I do it on a dry windy day, if possible, shaking off the soil carefully, so as not to twist the roots. I have them removed to an airy situation in a shed, or mushroom-house; there placed singly over the floor or shelves, till the soil remaining on the roots is dry. When perfectly dry, I lay them on shelves, secure from damp or frost, and cover them with dry sifted tan, manure from a mushroom-bed, or some material of this kind; in this way, they will keep perfectly sound and fresh. Care must be taken, that whatever is used for covering with, be completely dry.

JOSEPH HARRISON.

ART. XXII.—*On the effect of stirring the surface of the earth, as a relief against drouth.*

[FROM THE MASSACHUSETT'S AGRICULTURAL REP. AND JOUR.]

This is a trite subject, and one, which we are aware has been long since settled by intelligent cultivators in all countries. It is very familiar to gardeners, and the cause of the very superior production of gardens over field culture may be attributed in part to the more frequent application of the hoe and spade. Yet it is true, that a very great number of farmers deny the proposition, and disapprove the practice. They think it dangerous to

plough and hoe, in the time of extreme dought and heat, while our own experience of twenty years has convinced us, that it is much superior as a remedy, against drought, than watering in the limited manner, in which that must always be applied. There has never been a season in our memory in which there was a greater necessity for the application of *all* remedies against drought than the *present*. The drought was not only of longer duration, but it took place, when plants were the least able to resist it, not having sent their roots in quest of nourishment far, wide and deep. The early foliage, also, more tender, and more liable to wilt under a scorching sun and a drying wind.

In this extraordinary season, I had a small patch of early potatoes planted in a warm and sandy soil purposely to procure an early crop; the soil was, at least, three quarters pure sand, mixed with some food for plants among the sand. The severe drought threatened to a total loss of the crop. The potato stalks were feeble, drawn up, scarcely larger than goose quills, and I expected every day to see them wither; all hopes of a crop were abandoned. I thought, that they were the fair subjects of a *desperate* experiment. One of the hottest and driest days, I gave them a thorough ploughing, passing the plough four times through each row; first ploughing two furrows from the hills, as near the roots as possible, without throwing out the seed potatoes, and then returning the loam, or earth, instantly back by two other furrows. No rain intervened for ten days. In three days after, the potatoes changed their colour, they started afresh, as if they had received the benefit of ample showers, while not a drop of rain had fallen.

The dews, which were abundant, settled upon the new turned earth, while, before the ploughing, no moisture had been apparent.

The last fact, though it cannot have escaped the notice of the most careless cultivator, has not been as yet explained. We can easily see, that a soil, rendered porous, would more readily and easily convey its moisture to the roots. It becomes like a sponge, and is readily permeable, or rather readily permits the moisture to pass between its particles. But it is not yet understood why it attracts the moisture. Perhaps, however, it may be owing to its presenting a much greater surface to the moist air of the night. The fact, however, which is what *most concerns us*, is settled. Perhaps some of the experiments of our distinguished countryman, Dr. Wells, a physician of London, who rendered himself distinguished by his remarks on dew, may tend to explain this fact, though it is not my purpose now to examine the theory.

Every man, who feels an interest in the question, can satisfy himself, at once, by stirring a small piece of earth in a time of severe drought, and if he does not find it in the morning more

filled with moisture, than the undisturbed ground in its vicinity, let him continue a disbeliever.

But there is another mode, and it is one which I have never seen suggested, by which I apprehend the sirring of the surface, and making it light and porous, is beneficial in great droughts. It is this: light porous bodies are bad conductors of heat; perhaps because they have more air between their interstices. The facts are familiar to us. Metallic bodies acquire an intense heat under the rays of the sun, so do stones in proportion to their density. The earth, when very compact, will become exceedingly hot, but garden loam, which is very porous, remains cool at noon day, two inches below the surface. I believe, therefore, that moving the surface, and keeping it in a light and porous state, enables it to *resist the heat of the sun's rays*, that the air between the particles of earth communicates the heat more slowly than the partices themselves do, when in close compact.

Such is my *theory;* but I am an enemy of theories, I always distrust them, I look only to facts; and having observed that a slight covering of half an inch of sea-weed would preserve my strawberries from drought, which can only asise from its lying so loose on the surface, I have been led to infer, that the *undoubted fact*, that soil in a loose, pulverized state resists drought, is *owing to the same cause*, to wit, the slowness with which the heat of the solar rays is communicated to the roots. But the theory sound or unsound, I am persuaded that every farmer will find that the free use of his plough and hoe, in times of severe drouth, will be of more value to him than as much manure as that labour would purchase. I have been always convinced from my experience as an horticulturist, that the great secret in cultivation consists in making the soil porous. In raising exotic plants we know it to be true, and our flower pots are always supplied with soil, the most porous which we can obtain. The farmer may borrow light from an occupation which he looks upon with disdain, but which serves to elucidate and explain the secrets of vegetation. J. L.

Art. XXIII.—*On Pastures.*

[FROM THE GENESEE FARMER.]

The amount of land *wasted*, under the name of pasturing, even in the most thrifty and best cultivated parts of the country, is as immense as it is surprising. The best pastures are usually from one-half to three-quarters overgrown with worthless and annoying bushes. The very severe labour of cutting them down is resorted to from time to time; and the result is, that instead of being diminished or destroyed, they shoot out into innumerable branches, and become more injurious and more annoying. By the slightest observation, this fact is fully verified. Pastures that are not rich enough to produce bushes, fail also to produce grass, for the want of stirring and manuring the soil; and large tracts are thus left to sterility, so as not to pay for repairing the fences. A large farmer, who should let all his lands remain in pasture, in either condition, would, in a few years, be ruined.

Doubtless, the only effectual way to destroy the bushes is to plough and plant the land, till the seeds and roots are all dead and incapable of propagation. This method, though laborious, is sure to be effectual. We have seen it tried in various instances. The land should then be laid down in grass, with some manure, if it should require it. Adjacent bushes should then be destroyed in the same manner, or their seeds will gradually usurp the field from which they have been driven. Barren fields should also be cultivated in a similar manner, in order that the soil, by being stirred, may be rendered active and fruitful. Whenever the want of time, or the nature of the ground does not permit such a process of cultivation, large portions of it should, from time to time, be planted with useful trees; and when one or two generations of trees have passed away, the land may again be cleared, burnt, and laid down in grass. In this way, the land is at least rendered *useful*, and in an age or two the bushes will be partially destroyed, which by the plough, might be wholly destroyed in three or four years. It is high time that the useless and laborious practice of removing bushes was superseded by one of the two methods here recommended.

PART III.

MISCELLANEOUS INTELLIGENCE.

On the Pruning of Fruit Trees.—Particular regard should be paid to their health and vigour, and not to their size and age. A vigorous tree full of sap and twenty years of age, may be pruned with more safety than a stunted one fifteen years old, because the parts cut over would heal sooner in the former one, from its being full of sap, than in the latter, which was deficient in sap; indeed, the whole art of pruning consists in thinning out the branches according to the size, health and vigour of the tree; to have the tree as well poised with branches as circumstances will allow; and leaving those branches on the tree which will assist the general circulation of the sap.—*Gar. Mag.*

To Heal the wound on Fruit Trees.—When a tree is cut or otherwise wounded, smooth the place with a sharp knite, and if cankered, scrape or cut it all out; then put half a pound of tallow to two pounds of tar, warm it over the fire till the tallow is melted, then add one ounce of saltpetre, and stir it together and lay it on the parts you wants to heal.—*Hor. Reg.*

Transplanting from Hot-beds.—After raising plants in the hot-bed, some little experience is necessary to insure success in removing them to open ground. The common error which is committed in this business is, planting them out before the weather becomes warm enough to keep up the vegetable circulation; and the consequence is, that, during rainy weather, the plants looks water soaked and perish; but if the weather continues dry and cold, tender plants wilt and die. Each plants require a certain degree of heat to cause it to florish—some more and some less, and due reference should be had to this in removing them. Cabbages thrive best in cool, moist weather; but melons and cucumbers require a greater degree of heat, and of course should not be transplanted until the weather has become warm enough to cause the yellow locust to be in full leaf.—*Gen. Far.*

Seed Corn and Birds.—Mr. Goodsell.—As it is about the time for planting, I would mention a remedy against birds; as I have formerly received much damage, and was making my complaint to a gentleman of Northumberland County, Pennsylvania, when he gave me following directions, viz: To a bushel of seed corn put in a tub, turn in one pail of hot water, and stir it up well; then turn the corn into a bucket and let it drain a few minutes; then put in the tub, and turn in one quart of hot tar, stir it quick, so as to make it stick to all the grains of corn; then turn in four quarts of plaster, stir it well, and it will stick finely to all the grains of corn; and on stirring, they all become round and separate, and convenient to plant; come up fine, and all the blades of corn appear thrifty, and of a very dark green, and I am confident that no fowl, great or small, will meddle with it. I have practised this as above described for three years, and make other efforts to keep off birds. My corn comes up well, and receives no injury. I have thrown half a bushel at a time, down in the yard after planting, that was left, and the hens would not eat it—it would lay for weeks. Yours, J. SPICER.—*Ibid.*

Calves.—Those who have brought forth early are generally best for raising, as they will endure the first winter better; and, if heifers, will generally be with calf a year sooner than those which are calved late. The most promising calves should be selected for rearing, and the rest fatted and killed. There are three methods of feeding calves; the first is, to let them run about with their dams the whole of the first year; a plan, which is productive of the best cattle, though not the least expensive. A second mode, recommended by Dr. Deane, is to take the calf from the cow the next day after it is calved, and let it have only two teats of the cow to suck during the first week, three during the second, and all during the third and fourth; and in this way he says they will be fatter in the end than if they had all at first. The teats which are not given them should be previously milked.

Mowbray says "the calf may be sold (or taken away from the cow) as soon as it has drawn off the beastings, or first milk, unless any *coring* or defect in the cow's udder or teats may render it desirable for the calf to suck for a few days, in order that the action may clear off any obstructions, for which the *butting* of the calf's head is generally the best remedy. If intended to be fattened for the butcher, it must be kept in a pen, particularly dry and clean, suckled twice a day at regular hours, always have the first, which is the thinnest of the milk, and not be permitted to overcharge its stomach. Lumps of soft chalk are usually placed for the calf to lick as an absorbent to neutralize those acidities engendered in the stomach from feeding on milk. It seldom pays to fatten a calf beyond ten or twelve weeks.

Weaning and Rearing Calves.—A calf may be weaned by being gradually accustomed to suck milk in a pail through the fingers. Many are reared on very little milk mixed with hay-tea, linseed or other slops; fed on straw in the winter, and in summer on common—such cannot be expected to turn to much account. The best cattle are reared from the teats well wintered in good shelter, and full fed, until they attain their proper growth. Warmth and dry lodging are of the utmost consequence to the improvement of all young animals. Calves may, however, be reared to good profit by being suffered to suck a very moderate quantity daily, the bulk of their food consisting of skimmed milk thickened with oat or wheat-meal; their winter food being carrots or Swedish-turnips sliced, and oat-straw, with a small quantity of hay daily.—*N. E. Far.*

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Opening and Distending the milk vessels in a Cow.—In the northern counties of England, they wish their cows to calve when the grass is abundant. This, it is supposed, opens their milk vessels, and is a great means of rendering them ever after good milkers; which is not the case, unless nature is early made to have a tendency to that species of secretion. It has been found a good plan, to give the whole of the milk a young cow yields, to the calf, which she readily does, and thus gets into a good habit of milking."—*Ibid.*

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Manures and Teams.—In all those sections of our country that have been long cultivated, the accumulation of manure has been unquestionably a subject of the first importance. As most barn yards are arranged, a very great proportion of both the quantity and the strength of the manure is wasted by constant alternation of drenching and drying. Something to prevent these effects is required. Frequent carting of vegetable mould, bog earth, or common soil, will prevent the liquid from being lost and the manure becoming suddenly dry. During this month, and frequently in the course of the winter, earthy substances may be carted, if a sufficient quantity has not been previously procured. It is a rule, in respect to the economy of teams, that they should be well fed and have some one or more hands to keep them constantly going. To do this, increasing the manure heap should be the grand object when other indispensable business does not engage the team.—*N. Y. Far.*

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How to boil Potatoes.—Few persons are aware of the necessity of skill or attention in this common operation. Potatoes should be cooked by steam,

either by putting a small quantity of water in the pot, just sufficient to preserve an atmosphere of steam around the potatoes, or by introducing steam among through a pipe from a boiler. Strict attention must be paid that they be not overdone. In general, from ten to twenty minues of steaming are sufficient. Where the right point is attained, they are dry and friable, and easily reduced into meal. If the action of the steam is continued even a few moments too long, they become greasy, compact, and acrid, and are not easily mashed, which proves that a change of composition is commencing, which alters their qualities. It has been ascertained that potatoes which have been thus injured, or which are naturally acrid, may lose these qualites by the moderate and suitable operation of heat.—*N. Y. Far.*

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Soured Food.—It is not uncommon, in England, to mix meal and water, and let the mixture stand 10 to 12 days before it is given to hogs and cattle, for the purpose of becoming sour. For cattle and horses, straw, hay potatoes, turnips, and carrots, may be cut or chopped and minced with the water and meal. A little salt should be added.—*Ibid.*

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Large Hogs.—We have been to see the very large hogs, now exhibited at Nicholas Cornell's, near the Fulton Ferry. They are bred in Newtown, by Mrs. Rapelye, from a stock imported by Judge Strong, of Flushing. They are two years and five months old, one of them weighs thirteen hundred pounds, and the other very little short of the same. They are said to be of the *grass breed*, with short legs, bellies nearly touching the ground. Farmers should call and see the *beauties*, and might find it profitable to cultivate the breed.—*Long-Island Star.*

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Seed Turnips.—Farmers should be particularly careful in selecting the fairest and best shaped turnips for seed. Some English turnip growers consider seeds collected from turnips sown three or four years in succession to produce turnips with too many and long roots and thick and coarse necks. To remedy these they procure the seeds from turnips that are transplanted one year and are sown the next.—*N. Y. Far.*

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The Hopetoun Oat.—No season since the discovery of this new variety in 1829 has afforded so complete a test of its merit as the present. Oats of every kind have a rich luxuriant appearance this season; but the Hopetoun still preserves its superiority in earliness, length of straw, and closeness of crop. A small field of ten acres on the farm of Haughland, near Elgin, was sown on the 16th of March, on a wheat stubble, and had about ten single cart loads of manure per acre. The whole was fully in ear on the 10th of July, and should the weather prove dry and warm might be expected to be shorn on the 10th or 12th of August. Last year the Hopetoun oat was cut on the farm, the 11th of August. Persons of skill have valued the field at 10 quarters per acre. This variety seems, therefore, well deserving the attention and culture of farmers.—*Scotch paper.*

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On the Duration of the Vegetative Principle in common Garden Seeds.—We have frequently been asked the question, "how long will such a species of seeds retain their vegetative powers?" And there are few points connected with gardening which is more essential for a practical man to understand. We, therefore, subjoin a statement of *the latest period* at which seeds most generally in demand may be expected to grow freely. It not to be understood that the periods mentioned are unexceptionable, but it furnish a fair criterion of the length of time which they may be kept and expected to grow, with but few exceptions,

Cabbage, cauliflowers, brocoli, savoy and kail, four years; peas, beans, and other leguminous vegetables, one year; beets, ten years; turnips, four years; carrots, one year; parsnips, one year; radish, two years; spinach, four years; onions, leeks, and other alliaceous plants, two years; asparagus, four years; sea-kale, three years; lettuce, three years; endive, four years; mustard, four years; celery, ten years; parsley, six years; cucumber, melon, gourd, and pumkins, ten or more years. Annual and perennial flower seeds generally two years. Tree seeds are not in general to be depended upon after the first year. Any seeds which are subject to the attacks of insects, such as peas, beans, turnips, radish, &c. ought to be frequently exposed to air and friction, by passing them through a sieve or winnowing machine, which clears them from dust and other filth likely to attract or harbour those destructive insects; but in general, seeds should be kept quite dry and excluded from the air as much as possible —*Gen. Far.*

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Preserving Eggs.—Our correspondent, W. P. W. in our last, wishes to be informed of the manner of preserving eggs in lime water. We have known various methods practised with more or less success; but the following are among the most approved:

First.—Make a saturated lime water, in which place the eggs so that no part of them should be uncovered; let them be set in a cool place and they will keep through the season in good condition.

Secondly.—Let eggs be dipped in lime and water, mixed as a common white-wash, after which dry them and pack them in salt; this is said to preserve them perfectly, but would be subject to the same objections that W. P. W. makes against packing them in salt. In either case the eggs do not require repacking or removing until used. Others have dipped eggs in melted tallow—tallow, rosin and bees' wax mixed, and in common varnish. The objections against these methods are, that the wax is too costly, and that varnish does not dry well upon them. The object in all these different methods is to make the shell air tight, and any way in which that can be accomplished may be resorted to; after which if they are kept in a cool place, they will keep a good long time. We agree with our correspondent that attention should be paid to the rearing of poultry, as we are convinced that a given weight of fowls might be raised and prepared for market as cheap as a corresponding weight of pork, and it is well known that in most of our markets they will bring double the price. In England their epicures prefer fowls free from the yellow fat which is seen covering most of ours when brought in what we consider fine condition. This is certainly conforming to circumstances, as they have not Indian corn to feed them with, but fatten them on turnips and boiled potatoes, which, although it may increase their flesh, does not make them show fat upon the surface.

Perhaps our epicures may borrow this prejudice in favour of fowls free from yellow fat, in which case, feeding them upon potatoes would be found a very cheap way of raising them, and as the labour required might be performed by the women and children, it would not lessen the effective labours of the field; and one or two hundred chickens sent to market from the farm every year, together with a proportional quantity of eggs, would form an important item in the yearly accounts of the farmer.—*Gen. Far.*

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Hot Water for Cream.—Judge Buel observes, if the milk pans are put in water simmering hot, by which the cream, in the coldest weather, rises in twelve hours after the milk is taken from the cow. The milk pans remain in the water about thirty minutes. The churning of such cream does not occupy more than twenty-five minutes. The butter invariably has been of good quality.—*N. Y. Far.*